Vol. XV. No. 4 APRIL, 1925 Serial No. 40

Old-Time New England

THE BULLETIN OF

The Society for the Preservation of New England Antiquities

THREE DOLLARS PER ANNUM—SINGLE COPY, SEVENTY-FIVE CENTS

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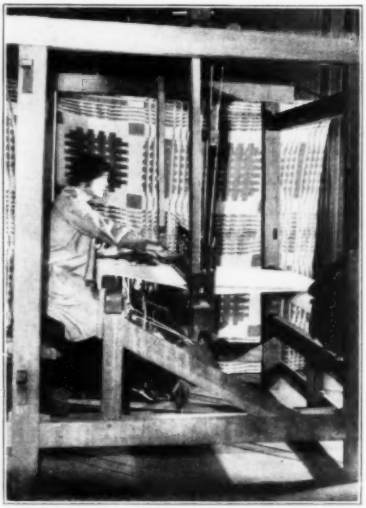

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The Society was organized in 1910 for the purpose of preserving for future generations the rapidly disappearing architectural monuments of New England and the antiquities connected with its people.

It owns and maintains nine houses built between 1651 and 1809 and located in various parts of New England; the "Quincy Memorial," Litchfield, Conn.; and the reversion of a house built in 1720.

It maintains a Historical Museum and Library at its Headquarters in the Harrison Gray Otis House (built 1795), 2 Lynde Street, Boston.

Its endowment funds and real estate represent investments of $241,438.09.

It publishes OLD-TIME NEW ENGLAND, subscription to which is included in the annual membership fee. All receipts from the publication are invested in the magazine itself or expended directly to promote the objects for which the Society was organized.

Membership: Life ($60); active ($6); associate ($3).

April, 1925

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Ownership statement of Old-Time New England, in accordance with the Act of Congress of August 24, 1912. Editor, William Sumner Appleton. Managing Editor and Business Manager, George Francis Dow. Owner, The Society for the Preservation of New England Antiquities, Charles Knowles Bolton, President; William Sumner Appleton, Corresponding Secretary; William C. Endicott, Treasurer. Stockholders and Bondholders, none.

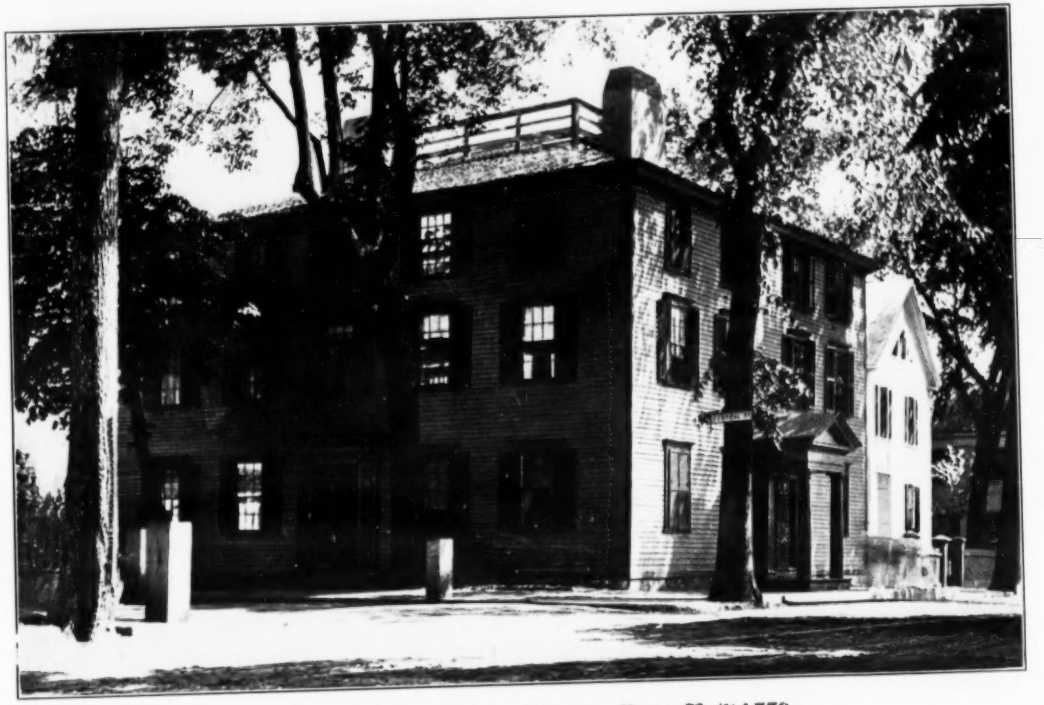
George Francis Dow.

Sworn to and subscribed before me this 15th day of April, 1925.

W. D. Richardson.

My commission expires March 23, 1928.

Entered as second-class matter September 19, 1920, at the Post Office at Boston, Massachusetts, under the Act of August 24, 1912. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized April 1, 1924.



Cabot-Lee-Kilham House, Beverly, Mass., Built 1773

PHOTOGRAPHED FROM THE NORTHWEST, ABOUT 1900

Old-Time New England

THE BULLETIN OF

The Society for the Preservation of New England Antiquities

A QUARTERLY MAGAZINE
DEVOTED TO THE ANCIENT BUILDINGS, HOUSEHOLD FURNISHINGS, DOMESTIC ARTS, MANNERS AND CUSTOMS, AND MINOR ANTIQUITIES OF THE NEW ENGLAND PEOPLE

Volume XV APRIL, 1925 *Number* 4

The Cabot-Lee-Kilham House, Beverly, Mass., and Those Who Lived in It

By Henrietta B. Kilham

ONE of the early settlers in New England was Josiah Root, who came to Salem in 1634. He had a son, and a daughter Bethia who married John Lovett, Jr. With his parents John had arrived in Salem when three years old but soon they all moved across the river to what is now Beverly. When Josiah Root died his son-in-law John Lovett came into possession of the land lying between what are now Essex and May Streets, and extending to the ocean, the fourth side bordering the main road to points north. John Lovett died in 1727, having devised a portion of this land, together with a set of cooper's tools, to his son John. It was this last John Lovett who, on 6 February 1773, sold some of this land bordering on the highway to Mrs. Elizabeth (Higginson) Cabot, who was at that time living nearby, on the other side of the street. She was born 30 March 1722, daughter of John and Ruth (Boardman) Higginson, and descended from the Rev. Francis Higginson of the First Church in Salem. She married Joseph Cabot, son of John Cabot, who, about 1700, came to Salem from the Island of Jersey.

Mrs. Cabot paid 83 pounds, 6 shillings, 8 pence, and the deed stated that "Mr. Lovett did covenant to open a way 30 feet wide and 10 rods long on the north-easterly side of the premises and adjoining thereto." This new highway became known as Cow's Lane and was gradually extended in length, but not until it was accepted as a street in 1868 did it reach the ocean at Mackerel Cove, passing on its way the site of the old fort erected at the time of King Philip's War as a precaution against Indian attacks. When the roads were named by order of the town, in 1838, Cow's Lane took on the more dignified but less interesting name of Central Street. On the land thus acquired, now the corner of Cabot and Central Streets, Mrs. Cabot erected, close to the road as was usual at that time, a fine three-story colonial wooden mansion with appropriate out buildings. The house was built for two families, being perpendicularly divided from east to west. Mrs. Cabot died in 1781 and on 9 November 1785

Mrs. Joseph Cabot
(Elizabeth Higginson)
1715-1797
FROM THE PASTEL BY COPLEY, OWNED BY
MR. JOSEPH LEE

Captain Joseph S. Cabot

REPRODUCED BY COURTESY OF THE ESSEX INSTITUTE, SALEM, MASS., OWNERS OF THE SILHOUETTE

her sons, John and Andrew, deeded the house and land to Joseph Lee, who had married their sister.

Elizabeth Cabot's son John was a prominent merchant in Beverly for many years. He represented the town in the General Court in 1792, and in 1796 was nominated as a candidate for representative to Congress but declined the honor. He was one of a corporation of five to forward the building of the bridge between Salem and Beverly. Andrew Cabot was born in Salem in 1750. He was in business with his brother John but soon accumulated sufficient wealth and retired. Their brother George Cabot was born in Salem in 1751, lived many years in Beverly and died in Boston in 1823. He was master of a vessel at the age of eighteen. He later became a prominent merchant and was a man of so much experience that friends and politicians asked his advice, and he was sometimes called "The Nestor of Men." He was long a warm friend of George Washington and Alexander Hamilton, and in 1789 General Washington visited him in the brick mansion which was his home across the street from his mother's house.

Joseph Lee was born in Salem in 1744 but resided a long time in Beverly. He was in partnership with John Cabot in foreign trade, and was for many years a seafaring man, later giving his time gratuitously to designing and reconstructing vessels and to other public interests. He was one of the promoters of the Beverly bridge in 1788, the construction being in the hands of a London engineer who, because of unpleasant friction was discharged when the undertaking was about half completed. Mr. Lee then volunteered to see the work through himself without remuneration. This he did most successfully and when in 1807 he moved to Boston in order to be near his children he was presented with a piece of plate in recognition of the valuable service he had rendered. In the same year he sold his Beverly estate to Abraham Kilham, a direct descendant of Austin Kilham,* one of the first settlers of Wenham, who, with his wife Alice, came from England in 1637 in the "Mary Anne" of Yarmouth.

Captain Abraham Kilham was born in Wenham 19 February 1765. In 1779, at the age of fourteen, he left home, shipping in Beverly aboard a letter of marque bound for Spain and commanded by Benjamin Lovett. "His property consisted of one golden guinea which was covered with cloth and sewed into the waistband of his trousers to be used in case of great need," as we learn from notes written by his brother John. He became successively mate, master and owner of vessels visiting England, Spain, France, Cape of Good Hope and Russia. He was director of the Merchants Bank and the Commercial Insurance Company of Salem, and from 1824 to 1828 was interested in manufactures in Dover, N. H. and Ware, Mass. In 1789 he married Betsy Lovett, who died in 1803. In 1807 he took for a second wife Louisa Bridge, sixth in generation from Mary Chilton and daughter of

*The Kilham or Killam family were at one time supposed to have come from the East Riding of Yorkshire, England, perhaps from Kilham, a village and parish five and one-half miles N.N.E. from Great Duffield; but Henry Waters in his "English Gleanings," in *N. E. Hist. and Gen. Register* (1898), gives the father of Austin as Henry Killam of Dennington, Suffolk Co., and quotes the baptismal records and also the will in which Austin, his wife Alice, and son Daniel are all mentioned. In 1653, when the people of Wenham contributed to the support of Harvard College, Mr. Kilham and his sons Daniel and John were on the list of donors.

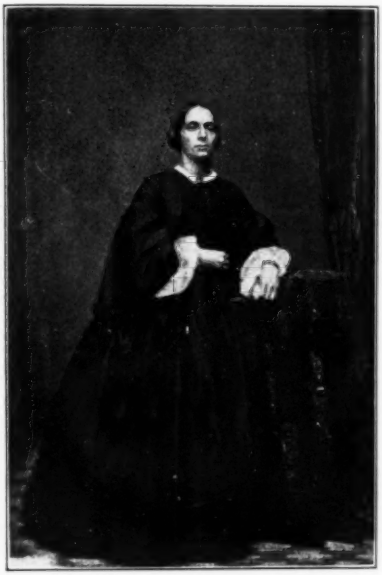
Mrs. Louisa (Bridge) Kilham
1779-1857
FROM A MINIATURE BY HENRY BROWN, OWNED BY THE FAMILY OF AUSTIN D. KILHAM

Dr. Richard Perkins Bridge, and brought her as a bride to the mansion he had just purchased, living in the southerly half of the house. The northerly half was occupied by Mrs. Josiah Page and her daughter Mary Anne, and Mrs. Page's sister, Mrs. Benjamin Lovett (Susan Whitney), until Captain Kilham's son Edward was married. Captain and Mrs. Kilham raised five children, three of whom, Edward, Austin and Charles, survived him. Edward was the only one to follow the sea and he rose to the rank of captain. Austin was a successful merchant. He and his brother Charles assisted in establishing a Protestant Episcopal Church in Beverly in 1863.

In 1857, Edward and Austin sold their interest in the estate to their brother Charles Abraham Kilham, who was born in Beverly, 9 February 1812, and married in Beverly, 11 March 1847, Hannah Fiske Conant, a descendant of Roger Conant. It was Charles who made a single family house of the mansion, cutting connecting doors on each floor. He was for a time associated with his father in Dover, Mass., and later was a member of the firm of Kilham, Loud & Co., ship brokers of Boston. He died in 1865 and the house remained in the family until the passing of his widow in 1921, in her ninety-ninth year. Her gentle, gracious presence in the

Charles Abraham Kilham

SHOWN WEARING HIS WEDDING SUIT, BLUE WITH
BRASS BUTTONS
FROM A SILHOUETTE, OWNED BY MISS OLIVE FAIRFIELD
DODGE



Mrs. Hannah Fiske Conant Kilham

FROM A PHOTOGRAPH BY D. W. BOWDOIN, OF SALEM, OWNED BY MISS HENRIETTA KILHAM

Charles Abraham Kilham

FROM A PHOTOGRAPH BY WHIPPLE, OF BOSTON, OWNED BY MISS HENRIETTA KILHAM

beautiful home is a blessed memory to all who enjoyed her generous hospitality. In 1922 her four surviving daughters sold the estate to the Knights of Pythias, who used it as a club house for a year and then it changed hands again and vandal "Progress" claimed it for its own. In 1924 it was moved to the rear lot to make room for the god of the age—the gasoline filling station. Now, shorn of its doorway and woodwork, it stands a ghastly skeleton awaiting reincarnation as an apartment house of 1925.

The entrance was of perfect Doric design. The beams and timbers were stout and strong, the doors were panelled in crosses, and the hinges of the front door, twenty-three and a half by sixteen inches in size, were put on with hand-wrought nails. What wonder the passing years touched the house so kindly, and that it remained a stately old dwelling to the very last! The interior was of extreme simplicity but contained the wainscoting, the panelling, the shutters and the old boxed stairway of the period.

The kitchen was large and cheery with the eastern sunshine. On one side of the room was a large open fireplace, with crane and iron kettle, in front of which stood the Dutch oven and tin kitchen, and at the right of the fireplace came the brick work of the chimney oven used for the larger bakings. In later years it was seldom used ex-

Miss Hannah Fiske Conant

FROM AN AMBROTYPE TAKEN IN 1846, OWNED BY MISS ANNA FISKE KILHAM

cept at Christmas and Thanksgiving, when baking, largely to give to the poor, before the days of organized charities. Here also were the wainscoting, panelling and old shutters.

There were fireplaces in many of the rooms. The one in the dining room held the old crane with the brass tea kettle merrily singing and the jamb hooks with the old brass fire set and bellows, and on Sunday morning one found there the hot coals to be placed in the little metal cricket which must be taken to meeting for the older members of the family. This dining room of Charles Abraham Kilham's was the kitchen of his father, the Captain, with the fireplace greatly reduced in size and a china closet taking the place of the brick oven.

In the southeastern room in the second story was an unusual fireplace with a shelf of soapstone directly over it, some distance below the high wooden mantle,—while the entire lining and casing were also of soapstone with a soapstone pillar on each side. This soapstone was probably added about 1820. That part of the hearth which projected into the room was of sandstone. Here, also, were a crane and brass kettle.

In the closet of the living room was a trap door with steps which gave the only access to the wine cellar, where were to be found case bottles and

Mrs. Hannah Fiske (Conant) Kilham

AND HER SON CHARLES ABRAHAM, FROM AN AMBROTYPE TAKEN IN 1855, OWNED BY MR. CHARLES RODMAN KILHAM

quaint jugs brought from across the water by the sea captains of the family, and on the shelves were bottles of cherry bounce and light wines to regale the chance guest.

There was the spinning room where was spun and woven the family linen; the garden chamber, fragrant in autumn with bunches of thyme, pennyroyal and St. John's wort hanging to dry in the sunny window, together with the choicer seeds of the garden flowers. The garden was laid out with a box-bordered, gravelled walk through the centre, with fruit trees overhanging, and here and there spanned by vine-covered arbors; while all about in profusion grew the hollyhocks, blue-bells, honesty and all the flowers of the olden time. But gone is the garden now, and as for the house, its old mahogany that stood there for over one hundred years, and the tall clock on the stairs, the old musket over the door, the spinning wheel, warming pans, Dutch oven, fire buckets, tinder box, and other heirlooms and joys of the past, which had been gradually relegated to the attic, were finally moved across the street to become part of the museum in the Historical House;—do these know of the sad havoc to house and garden that time can never repair? We wonder!

Courtesy Essex Institute, Salem

South Staircase, Cabot-Lee-Kilham House, Beverly

The Cabot-Lee-Kilham House, Beverly, Mass.

By Walter H. Kilham

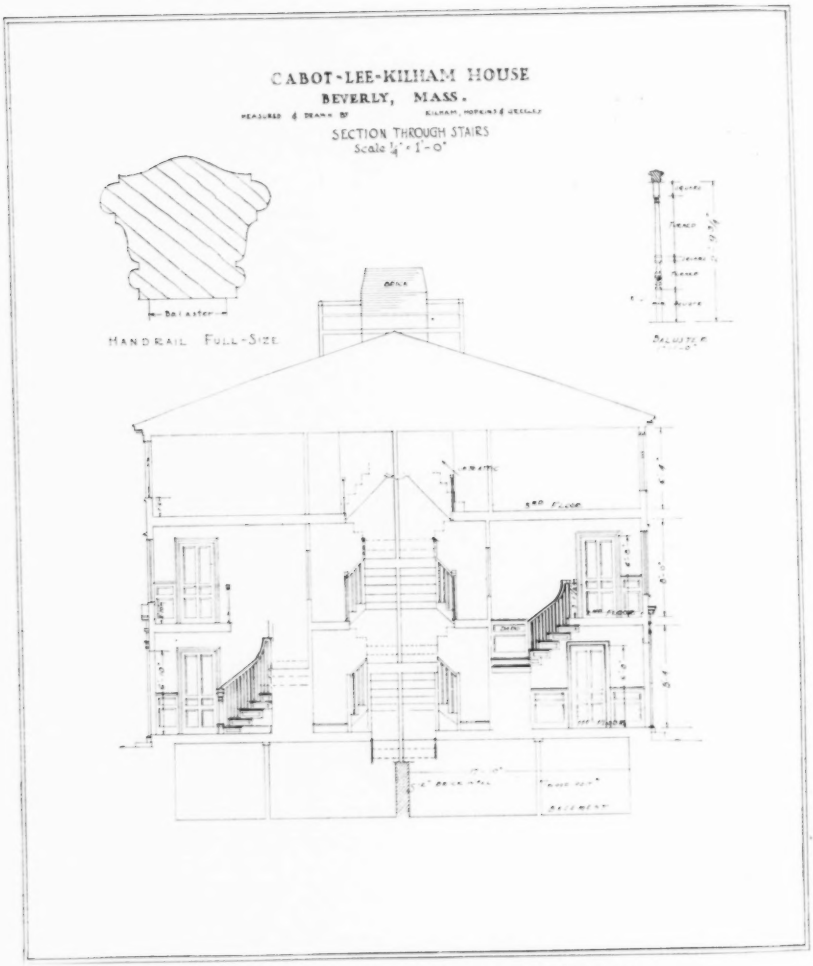
CABOT Street in Beverly, as my earliest recollections bring it to mind, was a rather narrow thoroughfare, dusty and muddy by turns, which wound and twisted its way up from the bridge through the long town on its way to Wenham and Newburyport. The old-fashioned houses which lined it, crowding closely to the street, were shaded by lindens of great age, which had grown to enormous size so that their trunks often occupied half or more of the sidewalk, besides projecting well into the carriage way. Along the center ran a line of track on which a bob-tailed tram drawn by a single horse made its way from Salem to the turntable a couple of miles above the bridge.

Halfway along the street, just before reaching the collection of shops which formed the business section, a group of square, three storied mansions claimed particular attention by their unusual air of distinction. These three dwellings, built by the Cabot family when the growing commercial importance of the port of Beverly promised a brilliant maritime future, for many years remained the chief architectural adornments of the town. One, the largest and finest, became the home of the Beverly Historical Society and a reasonable hope may be entertained that its preservation is assured. The second, where according to tradition George Washington was entertained in 1788, has disappeared, sharing the same fate as the third, the Cabot-Lee-Kilham house, the subject of this sketch, in giving way to a gasoline station. All three represented the acme of the domestic architecture of their time and the solidity of their construction assured their duration for a long period.

The Cabot-Lee-Kilham house stood closely on the street line with the Doric columns of its pedimented front porch projecting well into the sidewalk. Only two steps were necessary to reach its low-set first floor by any of the three main doors. It was planned for two families, so that there was a stairway entrance on each side, the front door and porch serving each section impartially. These two side doors were framed in fluted Doric pilasters, placed against a rusticated jamb and supporting a well proportioned entablature with modillions, that of the south doorway being surmounted by a pediment, while the north doorway had simply the flat entablature. The front porch had a well proportioned pediment supported by two unfluted Doric columns.

The main cornice, above the low square windows of the third story was rather massive with large modillions and the deck of the hip roof was surrounded by a plain fence or railing forming a "Captain's Walk" of the ancient type.

The two main stairways were of unusual beauty, even in those days. The steps were boxed and panelled underneath, and the balusters and rails were gracefully turned and ramped. Arched windows halfway up the stairs allowed the back stairways in the interior of the house to receive



OWING TO REDUCTION, THE SCALE SHOWN DOES NOT APPLY

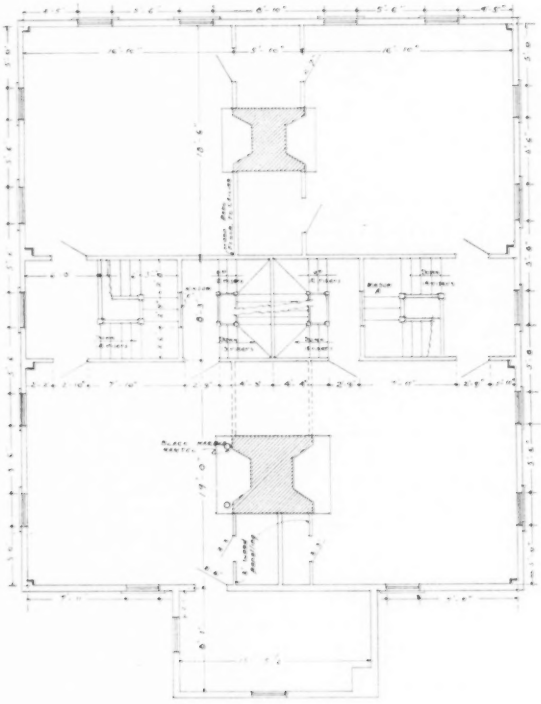
CABOT-LEE-KILHAM HOUSE

BEVERLY, MASS.

MEASURED & DRAWN BY KILHAM, HOPKINS & GREELEY

SECOND FLOOR PLAN
Scale ¼"-1'-0"

NOTE. CEILING HEIGHT 8'-0". ALL WINDOW OPENINGS 2'-8½" & 5'-1" 7'-10" ABOVE FLOOR. DOTTED LINES INDICATE PARTITIONS WHICH HAVE BEEN REMOVED. FLOOR BOARDS RANDOM WIDTHS UP TO 1'-6". INTERIOR PARTITIONS 3½" EXCEPT WHERE OTHERWISE NOTED. DOORS 2'-4" OPENING EXCEPT WHERE OTHERWISE SHOWN.



WINDOW 'B'
¼"-1'-0"

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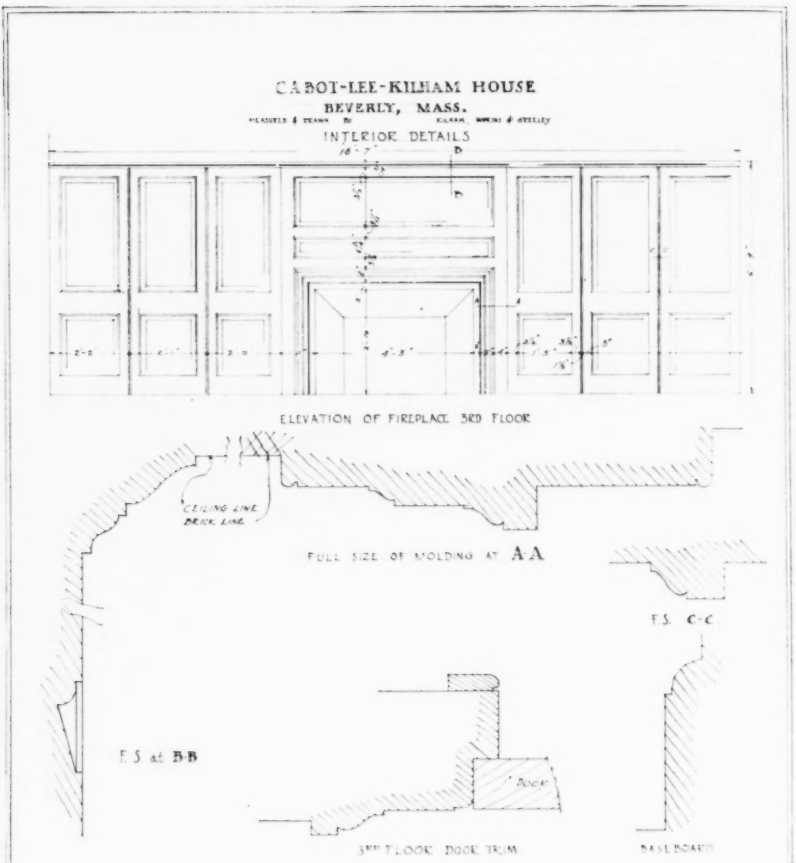

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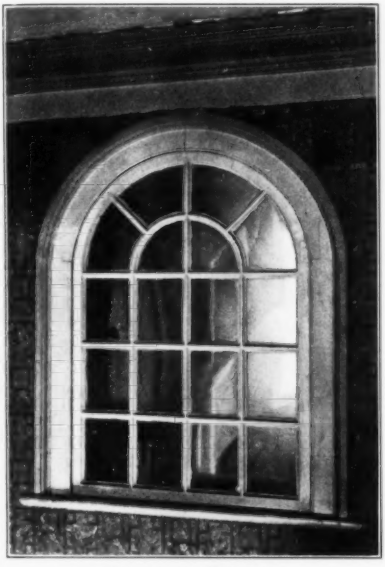
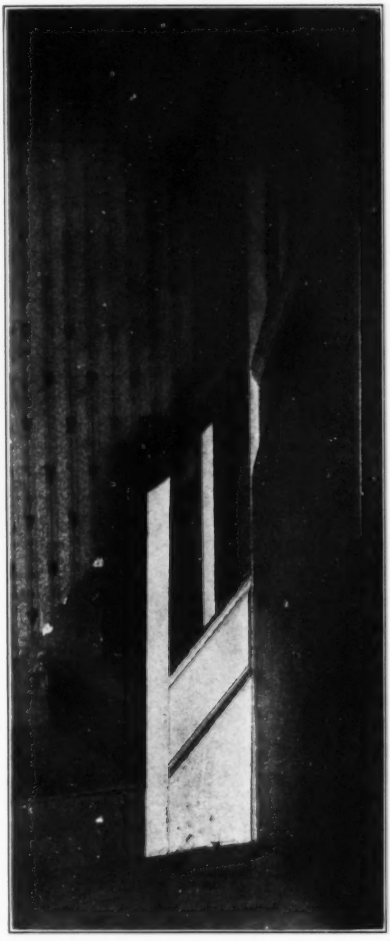


Staircase Window
CABOT-LEE-KILHAM HOUSE

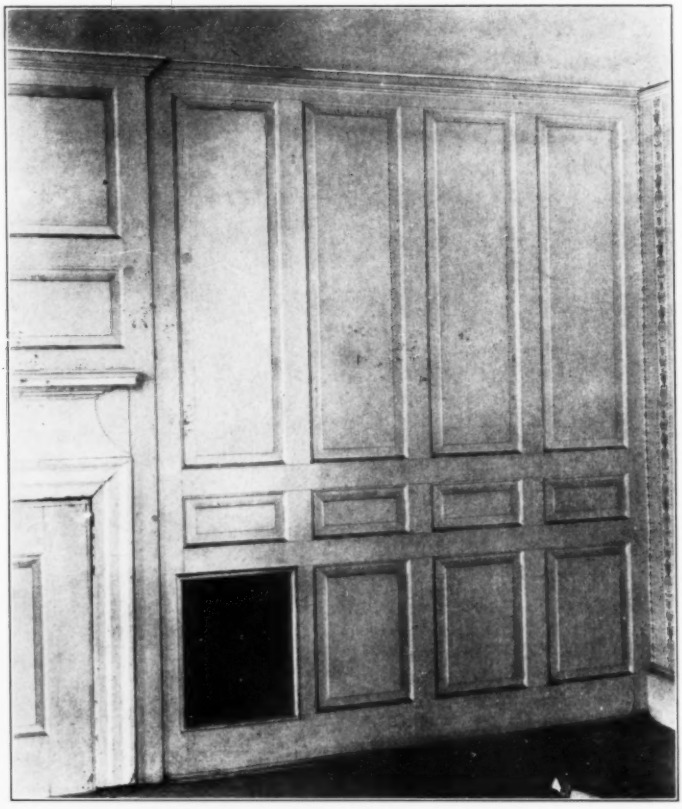
a "borrowed light." The two interior rear stairways, lighted as just described, formed an unusual feature, but were of great convenience.

The mantelpieces in the front rooms had been removed many years ago in a mistaken zeal for the modern glories of white marble and "Eastlake," but the bevelled panelling and shutters remained as did all the simple but dignified woodwork of the upper rooms. All of this woodwork was of the typical Beverly style, which was comparatively plain and massive, with rather larger and simpler mouldings than the contemporary work in the neighboring towns of Salem, Marblehead and Newburyport. This slight divergence in treatment, or local style, which prevailed among communities so close together is a



Back Stairs
CABOT-LEE-KILHAM HOUSE

rather interesting matter which might well form the subject of investigation before too many examples have disappeared. Undoubtedly the difficulty of communication was the primary cause, and this isolation led each community



Panelling in Second Floor Southwest Chamber

CABOT-LEE-KILHAM HOUSE

to depend much upon its own resources in architectural as in other matters.

Every visitor to the house (and visitors were many) was delighted with the garden, which, enclosed by high board fences, was a perfect example of New England gardening at its very best. The walks of yellow gravel with old-time borders of box, led in geometrical pattern among beds of the gayest of old fashioned flowers, while through an arch at the foot could be seen the ordered rows of the kitchen garden, just as neat as, if less striking than, the flowers.

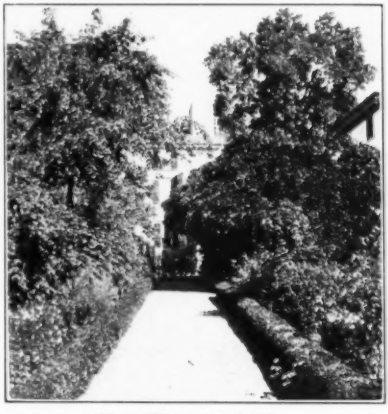
Connected with the house and sheltering the garden from the north (and perhaps accounting for its luxuriance) there ran along the Central Street sidewalk a long range of service buildings, comprising in order, first a sort

of work room, and then a shed open to the south where carts and wagons were kept or friends could drive under shelter for a while. Connected with this next came a good sized wood-house which also contained a well, provided with an iron pump and probably used for the cattle, as the well which supplied drinking water was in a small ell on the east side of the house, more convenient to the kitchens. This latter well had a crank and bucket. The enclosed court in the angle between the house and service buildings in the old days was paved with round cobble stones, many of which remained in the earth when the flower garden was enlarged.

Beyond the wood-house came the barn, first the carriage house portion which had large doors facing both north and south, so that one could drive through it from Central Street, make a circuit of the house over the paved court, and into the barn again if desired by the other door. The eastern half contained three stalls with a hay loft, pigeon house and steep stairs, and still farther on in a convenient pen lived the family which supplied the household with pork.

Below the vegetable garden Central Street continued to the sea with scattered houses but mostly running between fish-flakes which then covered most of the eastern part of Beverly.

The motorist who glides between rows of shops over the smooth granite pavement of the treeless street and perhaps takes careless note of the trim filling station of tapestry brick, will never miss the old brown house under the great lindens, but to those who care for picturesque New England, its loss means a distinct subtraction from the total of its charm.



Main Path in Garden

CABOT-LEE-KILHAM HOUSE, LOOKING WESTERLY FROM THE ARBOR TOWARDS THE HOUSE

Ancient Carpenters' Tools, Part I

By Henry C. Mercer, D.Sc.

THOUGH nearly all made in America, the tools of the house-builder of one hundred and fifty years ago, here described, including those used in felling trees, making and preparing boards, shingles, lumber, etc., for rough house construction by the carpenter, and for house finishing by the joiner and cabinet-maker, do not appear as American inventions but as European heirlooms, often in type two thousand years old, modified, rather than transformed, by a new environment. Because they pertain to no one district or even country, but to all countries, and to one of the most important and universal of human needs, namely Shelter, the following imperfect notes, while often local in origin, are not limited in meaning, and might reasonably apply not alone to New England or Eastern Pennsylvania, but to the United States in general and also to England and Continental Europe. The specimens, shown chiefly by photographs from the originals, may be classified by using the terms employed in Moxon's *Mechanick Exercises* (ed. 1678), and Knight's *American Mechanical Dictionary* (ed. 1878), as follows, first:—

Tools for Felling, Splitting and Log Sawing

Among these, the first illustration shows two examples of the so-called

Trade Axe (Fig. 1)

of the seventeenth century, first sold to the Indians by European traders; a heavy, rectangular, hafted blade, about eight inches long, representing the original tree-felling axe long ago employed in Europe, brought by the pioneers to Canada, Plymouth and Jamestown, and used by them on the forests of North America.

The now rare instrument should consist of (*a*) the bit or blade,—(*b*) the poll, or face opposite the bit,—(*c*) the eye, generally with a pointed lower lip (here lacking) for inserting the handle, —and (*d*) the helve or handle. Apparently surviving in common use until *c.* 1720 or 1740, it differs, not only in appearance, from the common, comparatively square American axe of to-day, but also in construction; namely, though equipped with a very long, down-flaring, flat-topped bit, it has no poll; that is to say, the iron encircling the eye, as if bent around the handle, has not been thickened or squared, to make a pounding surface opposite the blade; hence, as always in old European, and never in modern American axes, the bit outweighs the poll.

W. H. Beauchamp, in *Metallic Implements of New York Indians* (N.Y. Bulletin 55, 1902), says of these heavy, long-bitted, tree-felling instruments, that thousands of them, dating from the early seventeenth century, smith-marked with little round, variously hatched stamps, as here shown; imported from Holland (Utrecht) and also made or mended by English and French blacksmiths employed by the Indians, have been found on Iroquois dwelling sites, in New York and Canada, and there can be no reasonable doubt, from their size,—eight to

Fig. 1.—Trade Axes

Two tree-felling axes of ancient European type sold by European traders to the Indians at the time of the earliest settlements. Flat-topped, long-bitted, lacking

nine inches long, and weight,—three pounds, fifteen ounces (Fig. 1, lower), that they were not used by the Indians as tomahawks, and that the small, light, and deadly iron tomahawk, so closely resembling them in outline, was an afterthought, derived from them, by white blacksmiths soon after the settlement; before which time, the Indian tomahawk had been a stone or bone mounted club.

The absence of poll, observable in these trade axes, though common, is not invariable among old European axes, since some have polls (*cf.* Figs. 2 and 4); nevertheless, where occurring, it only adds to the overweight of the bit, by which fixed characteristic these early American tools are seen to be

poll and eye-lip, they are impressed on both sides with duplicate groups of little circular smith-stamps, faintly seen in the photograph, as follows: on No. 551, a close group of three half-inch stamped circles, enclosing two raised bars forming crosses and appearing just left of the eye, is repeated on the reverse. On No. 7716, the stamps show three instead of two cross bars, and form stars. As in all European axes, the bit greatly outweighs the poll. The handle of the hafted specimen is not original. No. 7716 was ploughed up at an Indian village site, at the "Forks of Neshaminy," now Rushland, Bucks Co., Pa., about 1870, by Joseph Warner. No. 551 was obtained in Chester Co., Pa.

There is a collection of these conspicuously flat-topped, lipless, poleless axes, at the New York State Museum at Albany; another, at the Provincial Museum in Toronto, Canada; another, of fourteen specimens, exactly of this type, from Indian graves in the Susquehanna Valley, in the possession of Mr. D. H. Landis, of Windom, Lancaster Co., Pa.; and Mr. Clarence B. Moore illustrates a replica, dug up, with a skeleton, from an intrusive (later) Indian grave in the Thursby Mound, Volusia Co., Fla. (*cf.* "Certain Sand Mounds of St. Johns River, Florida." Phila., 1894).

A further study of trade axes may show a great variety in their smith-stamps and a divergence in contour from the specimens here shown. But because the French settlers came to North America before the English, and because Capt. John Smith says that the Indians already had iron axes, before his arrival in 1604, we may reasonably infer, that, although some of these grave relics may be English, some Dutch and some Swedish; in the Northern and Middle United States, the oldest of them as probably represented by the type here shown, are French.

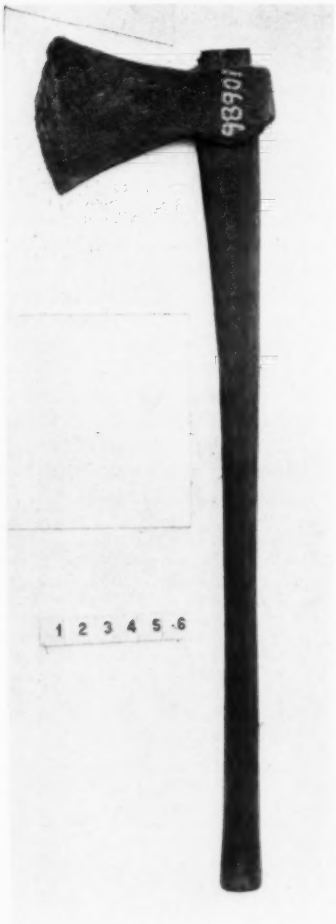


Fig. 2.—Anglo-American Felling Axe

This axe represents the type brought over in the *Mayflower* and to Jamestown and surviving in England in 1897. (*cf.* Fig. 4.) The heavy, flaring bit greatly outweighs the very small, flat poll. It was ploughed up about 1890, by Mr. Grant, on the Grant farm on the left bank of the York River, near York Harbor, Me. The handle is not original.

identical with all the old trans-Atlantic tree-felling instruments.

Another early imported axe of the European type is shown in the greatly rusted, heavy-bitted

ANGLO-AMERICAN AXE (Fig. 2)

dug up *c.* 1890, by Mr. Grant, on the left bank of York River, Me., about one mile from its mouth. Though not positively dated and somewhat differing in the upward flare of its blade, slightly thickened and flattened poll, and lip under the eye, from the unpolled trade axes, above described, and lacking the smith's stamp, this rusty master tool clearly shows the characteristic European and now utterly unfamiliar overweight of the bit, and certainly represents in construction the type of tree-felling axe brought over from Europe by the colonists in the "Mayflower", and in use in Europe from prehistoric times to the present day. What can better prove the antiquity of these long-bitted tools in Britain than the next illustration of

PREHISTORIC IRISH AXES (Fig. 3)

for the very interesting specimens, now in the Dublin Museum, varying in blade-flare, but not in construction, are nearly two thousand years old. They were dug up from ancient crannogs or mounds, heaped up in County Antrim, before St. Patrick came to Ireland. To demonstrate the survival of this ancestral axe-form in modern Europe, the next illustrations show recent

ENGLISH AND IRISH FELLING AXES (Fig. 4)

of similar shape and construction, gathered by the writer in 1897, in scrap-iron heaps in Limerick and Chester; and a modern

GERMAN FELLING AXE (Fig. 5)

in its original handle, given to the writer in 1899, by William Hoffman, a

Fig. 3.—Prehistoric Felling Axes from Ireland

These specimens were kindly photographed in 1897 from examples in the Dublin Science and Art Museum. Left, upper, from Dunschaughlin Crannog, Co. Meath. Left, lower, from Oldbridge, on the River Boyne, Co. Meath. Right, upper, Dunschaughlin Crannog. Right, lower, locality not recorded. These axes vary in contour and flare of blade, and all but the upper, right, specimen, lack poll and eye lip; nevertheless, in construction, namely, great overweight of bit, all are alike. Some kinds of iron, in some soils, rust more quickly in one hundred years, than these ancient axes (like the wrought-iron pillar at Delhi, also exposed in mother earth) have done in two thousand.

German emigrant, living in New Galena, Bucks County, Pa., who had used it in Halberstadt, East Prussia, and brought it with him to America, about 1890.

Sometime early in the eighteenth century, probably about 1740,—as meagre evidence, gathered with great difficulty, shows,—the unique instrument, unknown in other countries except by import from the United States, called in England, the

American Axe (Fig. 6)

(*Chambers Encyclopedia*, 1897) began to appear in New England and the Middle States. The comparatively short-bitted, heavy-polled tool, here illustrated by old farm axes and Revolutionary camp-site specimens, had become well-established before 1776—by which time it differed from the ancient axes previously described, not only conspicuously in appearance, but radically in construction; since, with the European ancestral instruments, the bit always outweighed the poll; in this new axe, the poll outweighed the bit.

Who knows when this happened? And why should book after book and dictionary after dictionary fail to account for the cause and origin of this change? As they do, we are left to deduce what we can from the scanty evidence. This shows, first, that the European emigrant continued to bring his Old World axes with him and use them, for a while (*cf.* Fig. 5), both before and after this new axe had superseded the European instrument, and such specimens as the very interesting

Perforated Trade Axe (Fig. 7)

with blade greatly lightened by grinding, and its otherwise meaningless per-

Fig. 4.—British Felling Axes

These modern British axes were found by the writer in scrap-iron heaps of junk dealers, in England and Ireland, in 1898. With their flared bits and eye overlaps, all, save the flat-topped No. 7486, resemble the Anglo-American specimen, shown in Fig. 2. Although slightly flattened at the poll, all show the great overweight of the bit, characteristic of all European axes. The straight handles are not certainly original, except that of No. 7598. No. 7537 was bought from Robert Twyford at Limerick, in 1898, and is stamped F.S. No. 7598 came from Barbara Canker, at a sale at Hollidaysburg, Pa., in 1899. No. 7485, from Mr. Axton, Victoria Store, Radcliffe Road, Southampton, England, in 1898. No. 7486, ditto. No. 7487 is from Dobbin's Iron Yard, Chester, Eng., bought June 12, 1898.

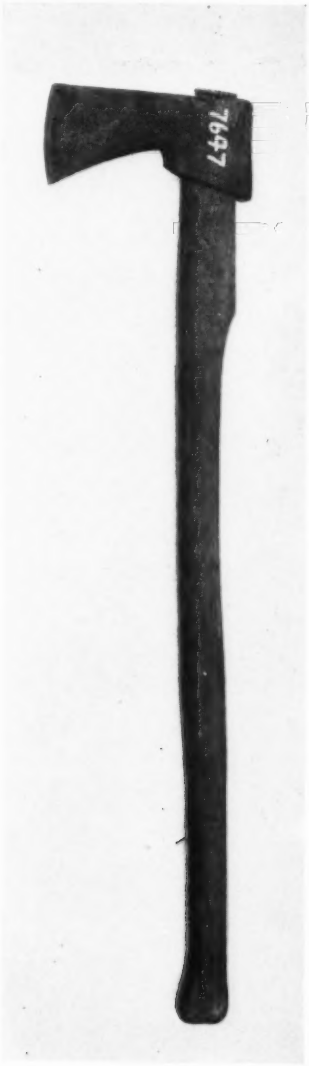


Fig. 3.—German Felling Axe

This axe, in its original handle, was given to the writer in March, 1899, by William Hoffman, who had used it in Halberstadt, East Prussia, about 1880. He brought it with him to New Galena, Bucks Co., and used it there until about 1890. It is very slightly thickened and flattened at the poll, flat-topped, smith-stamped, and heavy-eyed, as in the ancient Irish axe, Fig. 3, upper left; and like all European axes it shows the very characteristic over-balance of the bit.

foration; and the shorter-bitted, heavier polled axe (Fig. 9) of date *c.* 1740, from Salem, Mass., might indicate that the newcomer, unfamiliar with axes in the Old World and suddenly transformed into a woodman in the New, found that his long-bitted, Old-Country axe "wobbled" in the stroke, and the more he lightened the bit by grinding it down and the more he weighted the poll (Fig. 9) (not so much to pound with, since the woodman rarely pounds with his axe, but to over-balance the bit) the better it cut.

The above described axes, whether of the old European or late American type, though used by carpenters, were more particularly the tools of the woodman, and abundant evidence shows that until *c.* 1840 they were generally home-made, by local blacksmiths, of iron, with strips of steel inserted for the blade (*cf.* Fig. 8), and that the latter continued to make them, on special occasions, long after 1840, both in America and Europe. This fact is vouched for by the unique photograph,

Axe Making (Fig. 8)

which shows, by two half-finished specimens, recently bought, that William Schaeffer, blacksmith, of Kutztown, Pa., still (1925) makes these axes by hand for sale. Jeremiah Fern of Doylestown, Pa., says that he made American axes, about 1864, at Edge Hill, near Quakertown, Pa., exactly in this manner, by welding together, over a handle pattern to form the eye, the sides of two blocks of iron, and then

Fig. 6.—The American Axe

These axes are of typical American construction, as developed in the American Colonies before about 1750: of a type unknown, except by importation, in other parts of the world. In the compact, almost square instrument, the heavy, squared poll, at variance with all Old World axes, outweighs the bit. The handles here shown, are not original. All the heads show lip extensions below the eye. None of the blades are basil edged. All except possibly No. 740 used by Barbara and Magdalena Landis, in the 19th century, at Grier's Corner, near Doylestown, Pa., are home-made. No. 18262 was dug up at the Revolutionary camp site at the Dyckman House, on Park and Prescott Avenue, New York City, by Mr. Reginald P. Bolton, and given to the Bucks Co., Pa., Museum in May, 1922. The lower loose specimen (on a slightly larger scale) now in possession of

Fig. 7.—Altered European Axe

This interesting specimen was found at Jack's Reef, on the Seneca River, N. Y., and is in the New York State Museum, at Albany. It is illustrated in *Metallic Implements of the New York Indians*, by William M. Beauchamp, N. Y., State Museum Bull., No. 55, pl. 21. Although the instrument, unlike the other trade axes shown, has an underlap on the eye, the author (Mr. B.) classes it with trade axes and says that the blade was evidently once longer than it now is. If so, it might well show the experiment of an early blacksmith to "Americanize" a European axe (of shape No. 7486, Fig. 4), by further lightening the ground-down blade, with the otherwise meaningless perforation, and weighting the poll by welding on a rim.

welding and hammering to an edge, a strip of steel as here shown (the blade), inserted into a split on the bit margin (*inf.* J. F. to Horace Mann, Aug. 9, 1924); and Karl Klemp, now of Doylestown, made axes of the long-bitted or trade-axe type, at Schneidemoll, near Dantzig, in *c.* 1896, by hammering one end of an iron block into a thin tongue, wrapping and welding the latter over a handle form, and inserting the steel blade as before (*inf.* K.K. to Horace Mann, Aug. 1924).

According to J. L. Bishop (*History of American Manufactures*, Phila., 1864), the making of American axes in factories, beginning early in forges, with water-run trip hammers (Hugh Orr, at Bridgewater, Conn., 1738–48)—(at Sutton, Mass., 1793)—(Collins, at Hartford, Conn., 1828)—(at Chambersburg, Pa., 1829); competing with imported European axes in Virginia, 1788; finally, by the use of cast steel, never employed by the local smith, 1846–59; (*cf.* J. M. Swank, *Iron and Coal*, in Pa., 1878) and the help of railroads, about 1840, generally superseded the home-made axe.

Omitting here the indispensable process of sharpening axes, when possible with a grindstone, when not, with a pocket whetstone, to be described later, the evidence derived from old

the Berks County Historical Society and photographed by their kind permission, was dug up on the site of a Revolutionary Fort, at Reading, Pa., where it had been probably used by one of the American guards or Hessian prisoners. The others were found in scrap-heaps, or on farms, in Eastern Pennsylvania, about 1890. Jeremiah Fern, blacksmith, of Doylestown, says that he made axes like these, near Doylestown, about 1870, by forging two iron blocks over a handle pattern and inserting a steel blade into a split on the bit edge. (See Fig. 8.) According to W. J. Phillips of McElhattan, Clinton County, Pa., axe helves in the Pennsylvania mountains, in the 19th century, were generally made of hickory but sometimes of white oak. The old helves were always straight. Curved helves, home-made, originated there shortly after the Civil War, *c.* 1868. (Information of Col. H. W. Shoemaker of McElhattan, to the writer, October, 1924.)

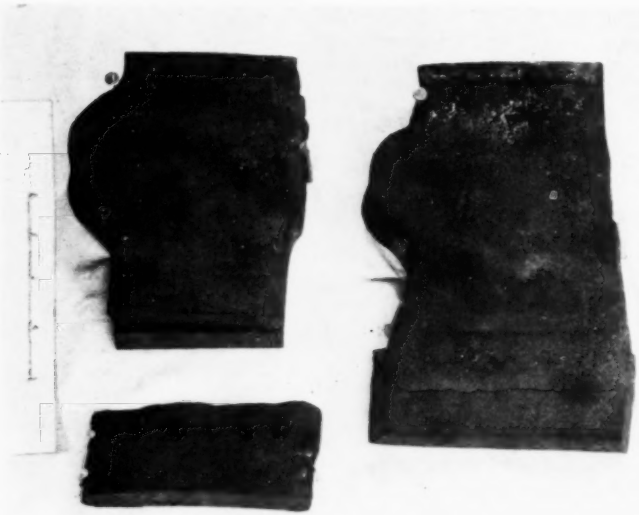


Fig. 8.—Half-finished, Home-made Axes

The blacksmith has roughly welded together two rectangular slabs of iron, over an iron handle-pattern (not shown) so as to leave the eye-hole. The thin steel blade, not yet placed, is shown loose with the left specimen. To the right, it has received its first rough weld, on insertion between the two slabs, where they meet at the bit's eye. These specimens were bought Jan., 1925, during their process of manufacture, from William Schaeffer, blacksmith, of Kutztown, Pa., who is still (1925) making axes for sale, by hand, in this old way.

axes found by the writer, and by tradition, shows that the ancient

AXE HELVES (or handles),

still used in Europe in 1897, though often knobbed at the hand end, were always straight (Fig. 9), and the much-praised, very carefully curved, tremulous, American axe helve, made by the woodman himself from selected hickory, rarely white oak, with the draw knife (Fig. 6), did not come into general use before the mid-nineteenth century, in the North Pennsylvania lumber country (*inf.* W. T. Phillips of McElhattan, Centre Co., Pa., to Col. H. W. Shoemaker to writer Oct. 1924); after which, *c.* 1860, cheap factory-made helves, of the same shape, became so numerous, that to-day, a straight handle on a single-bitted, tree-felling axe is a thing unheard of.

Before leaving the subject of tree felling with the axe, let us glance at another picture which shows the highly interesting process of

CROSS-CUTTING LOGS BY FIRE.
(Fig. 11)

Here we see, according to information of Mr. F. K. Bowlby, how the inhabitants of Washington County, Pa., until about 1890, sometimes bi-sected freshly felled trees, dozens at a time, by "niggering" them, as they called it; namely, by burning downward upon

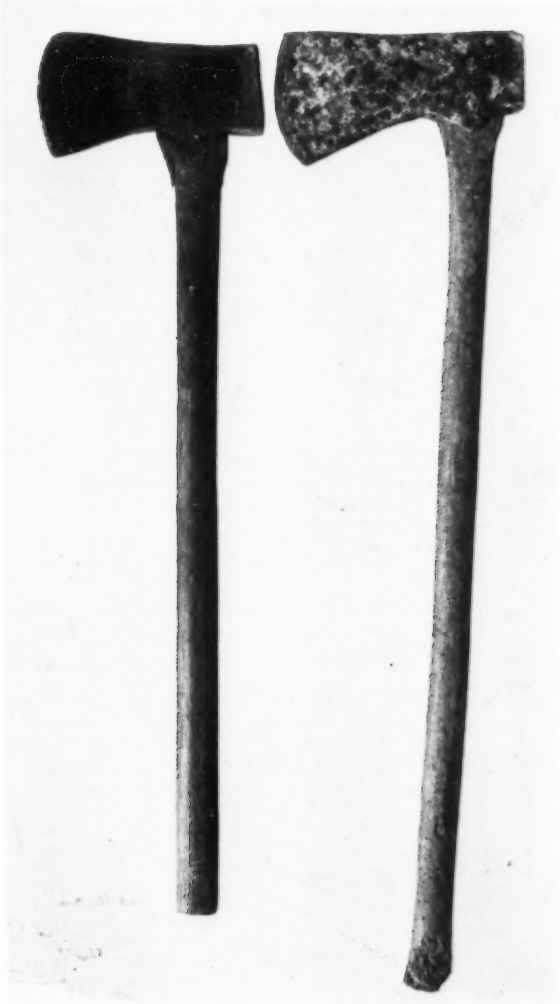


Fig. 9.—Old Anglo-American Axes

Photographed by the kind permission of the Essex Institute, Salem, Mass. The right figure (Museum No. 101,137) shows a felling axe, of date 1725, of Anglo-American earliest type. It lacks a poll, and but for the eye overlap, exactly resembles the trade axe, Fig. 1. The characteristic straight helve (handle) is original. It was found where left by the house builders under the floor of a house erected in 1725, at Riverdale, Gloucester, Mass. The gift of L. R. Curtis. The left specimen (Museum No. 2559) is a felling axe, of inferred date about 1750. This remarkable axe is evidently of intermediate Anglo-American construction. The bit is still very

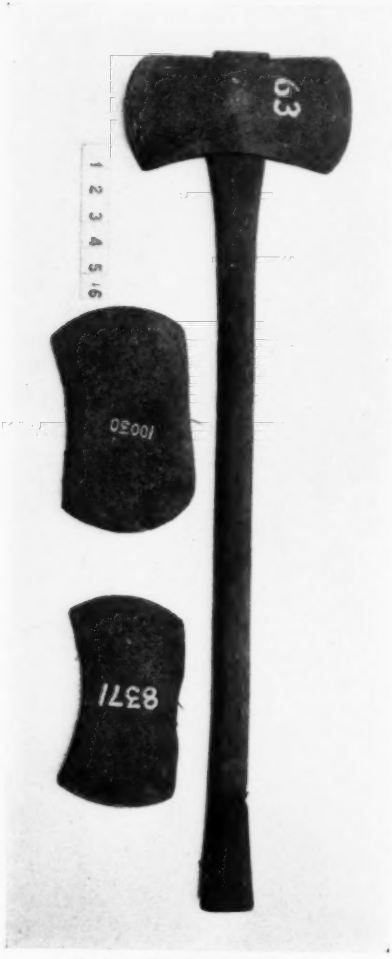


Fig. 10.—The Double-Bitted Axe

The three factory-made specimens here shown come from Bucks Co., Pa., and illustrate a comparatively modern, 19th-century tool of the lumberman rather than the carpenter. They were used in extensive forest felling, where, minus a grindstone, they kept sharp twice as long as the single-bitted axe. The handle had to be straight, so as to work both ways.

The double-bitted war axe is as old as Rome and Egypt, but no 18th-century specimens of this deadly, tree-felling tool have been found by the writer. According to Seth Nelson, a mountaineer artificer, woodman and hunter, of Round Island, Clinton Co., Pa. (born 1838), this instrument, at first called "The Yankee Axe," and objected to as a back-wounder, was introduced into the Pennsylvania mountains about 1850, by lumbermen from Maine; after which (1860–1870) it became popular and widely home-made and superseded the old single-bitted tool in the Pennsylvania lumber country. One blade was kept very sharp, for felling; the other less so, for lopping knots. (Information Col. H. W. Shoemaker, of McElhattan, Pa., to the writer, Jan. 14, 1925.)

Two other specimens (not shown), homemade by Mr. Nelson, about 1880 and obtained by Colonel Shoemaker, are in the Bucks Co. Historical Society Museum. No. 10030, bought from Herman Bader, at the Elephant Tavern, Bedminster Township, Bucks Co., Pa., Nov., 1916, was found by him about 1911, while repairing his old log house, one-fourth mile east of "The Elephant," on the "Ridge Road."

long, but the poll has been considerably lengthened (weighted) so as to almost, if not quite, counterbalance it. Nevertheless, the final "American Axe," with its short bit, and over-balance of poll, has not yet been reached. The straight handle is original. The gift of Mrs. H. A. Brown.

them, with fires carefully watched, spaced and restricted from spreading by mud and water.

Who can estimate the immense historical importance, in felling trees and cross-cutting felled logs, of a steel instrument (the axe), two thousand years old in Europe, but which the primitive races of North America never heard of? And what of the hardly less valuable help given to would-be civilization by the tools used from time immemorial to split, or otherwise cut lengthwise, the prostrate tree?

As an example of the latter, a very important tool used by or for the old house-builder (rather for preparing the raw material than putting it together) was

THE FROW (Fig. 12),

an ancient European instrument, referred to by Capt. John Smith to "split poles" at Jamestown in 167[illegible]

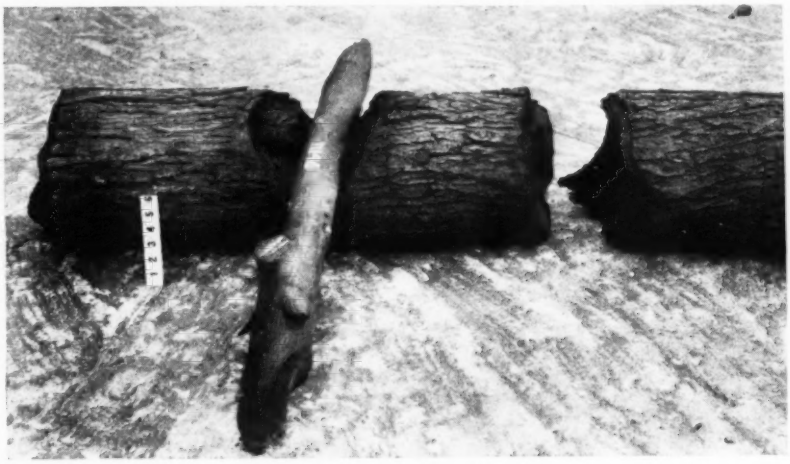


Fig. 11.—"Niggering" Logs

This illustration shows a freshly felled log, cut by a small, regulated fire built upon it by F. K. Bowlby of Doylestown, Pa., to show the operation called "niggering," as practiced by him in Washington Co., Pa., about 1880.

(*New English Dictionary*), and frequently mentioned in the *Essex Co. (Mass.) Court Records* (1635–1681). It is a thick-backed, rigid, dull-bladed steel knife, about fifteen inches long and three and a half inches wide, hafted at right angles upward from its blade, with which, by wriggling the short handle to maintain the thickness of the split, and clubbing the projecting knife end with

THE FROW CLUB (Fig. 13),

shingles, laths, barrel staves, and short, four to six foot long, clapboards, were split (riven) from squared or quartered logs.

Heavy planks, rafters, 16-foot floor boards, or fence rails, too thick for this light instrument, had to be sawn or hewn by wedge splitting (described later), but documentary evidence shows that the frow made the short clapboards, above noted, for the old wooden houses, in New England and elsewhere, in the eighteenth century, and for the gables of log houses in Pennsylvania in the nineteenth century, and universally and exclusively was used to split house shingles and laths, everywhere in the United States until 1840, soon after which, sawed laths and later, sawed shingles, drove the instrument out of use.

Nevertheless, a few old riven shingle roofs still (1925) survive in Haycock Township, Bucks County, Pa., and we here show the home-made

SHINGLE HORSE (Fig. 14)

seated by which, with the oaken block leaned into its fork, Enos Lewis split shingles, near Hagersville, Bucks County, in 1890, and

THE SHAVING HORSE (Fig. 15)

in which the split shingle had always to be thinned with the draw knife at

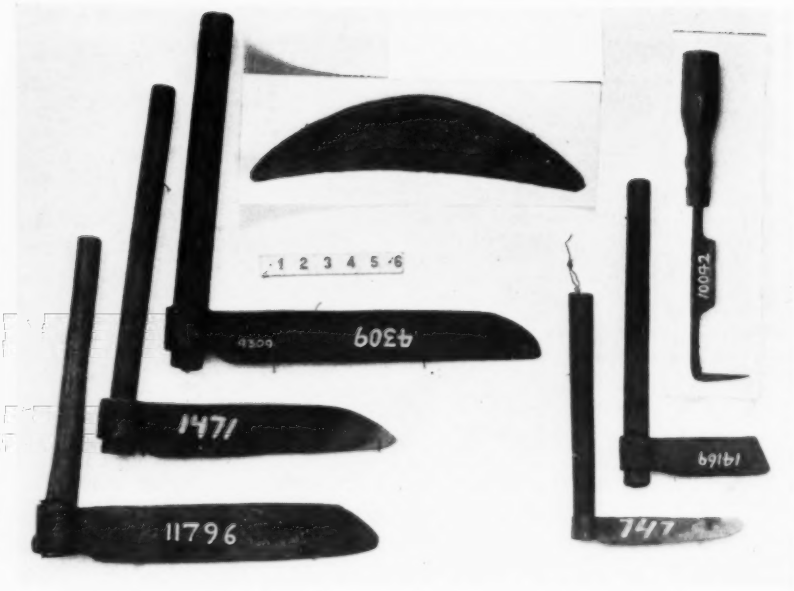


Fig. 12.—The Frow

Having placed a block (red oak in Penna.) about eighteen inches long and squared, or quartered from the log, to the required five-inch width, the worker, holding the handle vertically in the left hand, sets the heavy, wide-backed blade of the instrument, on the top of the block placed vertically in the tree forke "Frow Horse," shown in Fig. 14. He then strikes the back of the blade, beyond its projecting end, continued blows with the club (Fig. 13), while he wriggles the handle, if necessary, so as to hurry the split, or regulate the depth of the cut, until a segment of the block,—the shingle, flies off. Brought to America by the first colonists in the 17th century (*cf. Essex Co. (Mass.) Probate Records*), the frow was ousted, for clapboards, by the up-and-down, water-run mill saw, in the 18th century (*cf.* Fig. 29) and for laths and shingles, by the circular saw, about 1830–1840; but survived, though rarely, for shingles, in Pennsylvania, until about 1890. Hand-riven shingles, imported from the South, were sold in competition with mill-sawed shingles, in Pennsylvania, in the late 19th century (*inf.* Lewis Treffinger, carpenter, of Doylestown, to the writer, 1924).

J. A. Rittenhouse of Philadelphia, in 1859, saw negroes in Nottaway Co., Va., splitting clapboards about six feet long, shingles about two and a half feet long, and laths for drying tobacco, with the frow and a horse, with two forks, otherwise like No. 11795 (Fig. 14). (*Inf.* of J. A. R. to the writer, Oct. 20, 1918.)

Fence palings were riven in northern Bucks Co., as observed by the writer, as late as 1890, and short boards, for "ash hoppers," in western Penna. until about 1800. (*Inf.* E. F. Bowlby to H. C. M.)

Mr. F. K. Swain of Doylestown, in January, 1917, saw a negro, ex-slave, splitting shingles near the cemetery at Vicksburg, Miss., from blocks about eighteen inches long, quartered from cypress logs. The workman worked across the quarter, so as to leave a triangular waste piece. He clubbed the blade into the wood and then either wriggled it to split off the shingle, or struck it further blows upon the protruding blade end and handle top. It took about three long-pull shaves (right, left and middle) of the draw knife, upon the shingle, clamped in the shaving horse, to thin its top surface and straighten its long sides. Numerous mis-splits were thrown away. The workman said that the shingles lasted about sixty years.

No. 11796 was in use by Anson Franklin, near Madison Co., N. C., in October, 1917, when Mr. Horace Mann bought it, with his whole apparatus, for two dollars.

No. 747 is a grafter's frow, given by Aaron Seifert of Springtown, Bucks Co., Pa., August, 1897, and used by him, until that year, for splitting the parent stock of fruit trees, to insert the graft. Nos. 10042 and 14169 are also grafters' frows. No. 19178 shows the semi-circular frow, minus handle, used in Korea, for making roof shingles. It was bought, in 1922, from a workman at Kang Kei, Korea, by the Rev. Clarence Hoffman.

one end (the upper) and on one of its sides, right or left, for overlapping.

THE SHINGLE BUTTER (Fig. 16)

was employed for trimming, at a mitre, for looks' sake, the rough bottoms (butts) of shingles, and

THE SHINGLE PUNCH (Fig. 17)

was sometimes used instead of a gimlet, for quickly making the preparatory nail holes (described later) in the exposed corners of riven shingles.

But the riving of shingles and clapboards was light work compared to the splitting of logs or segments of logs that the frow could not split. For this, a far stronger, wider-reaching tool was needed; namely, the

IRON WEDGE (Fig. 18),

an instrument of unknown antiquity,—the "cuneus" of the Romans. Look at the "little Iron Giant," while the mists of Ages gather about its triumphant shoulders; and also at the ringed maul or beetle, which is still used (1924) to drive it, in splitting firewood and which, until about 1890, was so employed in the Middle States to make the rails for the celebrated

WORM FENCE (Fig. 19)

As a great rarity and as a supposed (probably ancient German) improvement on the "maul and wedges," we include

THE HOLZAXT (Fig. 20)

a heavy, iron, wedge-shaped, dull-bladed, sledge axe, never used for felling, which will not only hammer wedges but split wood; and also the iron wedges, wood-topped, to prevent spreading under its blows, still (1925) sometimes used in Berks County, Pa.

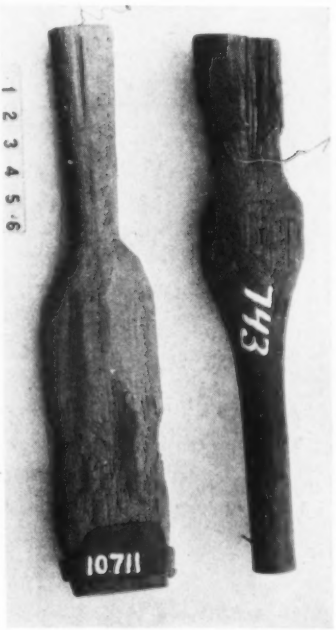


Fig. 13.—Frow Club

Used by the shingle maker to pound down the frow in splitting the shingle from the native block. When too much battered they were thrown away and replaced with fresh instruments. No. 743 was obtained from Aaron Seifert of Springtown, Bucks Co., Pa., in 1917.

But the wedge and beetle, rather than these rarities, did the great work. If they had only been used, as now, to split rails and firewood; if they were not associated with one of the oldest and greatest steps in Human Industry, namely, the first making of the BOARD, we might dismiss them with a word; but Beckman (*History of Inventions*) quotes a writer to prove that the Norwegians were making boards with wedges, instead of saws, as late as about 1750; that is, wedge-splitting logs and thinning down the segments,

Fig. 14.—The Frow Horse

In eastern Pennsylvania the squared or quartered block of red oak, about eighteen inches long by six inches wide, is stood in the fork of the lower homemade apparatus, and split by the workman, as described under Figs. 12, 13 and 14. The lower apparatus, No. 11843, was made by the late Enos Lewis, about 1890, and was often used by him for splitting shingles, until his death in 1916, when it was bought from his widow, at his log house, one and a half miles north of Churchill, Bucks Co., Pa.

The upper specimen (No. 11795) shows a simple tree-fork, without legs, used for the same purpose by Anson Franklin, near White Rock, Madison Co., N. C., in October, 1917. The fork, with a block nailed within the crotch, is laid, with its point on a rock or stump, its two prongs resting on the ground. The shingle block stands vertically in the crotch.

for the purpose; and he further says that Peter the Great introduced the pit saw (described later) into Russia about that time to prevent his subjects from thus wasting wood. We know further that the American pioneer certainly (*cf.* Joseph Doddridge, *Notes on Settlement and Indian Wars*, Pittsburgh, 1912) hewed smooth the upper faces of split logs, called "puncheons," on occasions, to ground floor his cabin, and we may suppose, though minus documentary proof, that he sometimes even split and hacked out floor boards and boat planks. But these instances of full-sized riven boards or planks (as distinguished from clapboards) or "puncheons," were not steps in craftsmanship in the seventeenth and eighteenth centuries, but only makeshifts, for, as

Fig. 13.—Shaving Horse

The workman sits astride the bench, presses down the foot lever, so as to hold fast the freshly riven piece under the projecting clamp-block, and then shaves thin one of the ends of the shingle for top underlap, and trims and thins one of its sides, Pennsylvania style, if desired, for side underlap. Besides its use for shingles, this home-made apparatus was continually employed on Pennsylvania farms, until the late 19th century, for miscellaneous draw-knife work. The specimen here shown is from Buckingham Township, Bucks Co., Pa. The same type of "horse" may be found everywhere in New England and the Northern States.

shown later, the far more efficient saw had been employed for board making for two thousand years.

Outranging the edged tools above mentioned, because potent in cutting metal and stone as well as wood, the all important saw, as a master tool of the wood worker, has outrivaled the axe and outclassed the wedge from the beginning of history. Some of its eighteenth-century forms still (1925) survive; others, masked or supplanted by machines, are seen or heard of no longer. In this latter class, the two-man saw, called "pit saw" in the eighteenth century produced (until *c.* 1720, in Pennsylvania) the chief raw material for carpentry,—namely boards, sawed directly from the log, and so outranks in historic interest and importance all other saws.

Save for the short, thin, frow-riven clapboards and the wedge-split, makeshift planks and "puncheons," or the reversions to the wedge, in Norway and Russia, above noted; the evidence shows that this tool, inherited from the Romans, was continually used to make boards in historic Europe; and tenaciously and tyrannically held to as a breadwinner, by the sawyers, who kept on hand-sawing boards, in England until about 1820, and banded together in mobs, broke down saw mills there in 1663 and in 1768; and in Mississippi, in *c.* 1805, where they smashed the saw mill at Natchez, afterwards called the "riot mill," long after mill-sawing had been established; in Holland, *c.* 1596 (Disston); in Germany, 1322–1490 (Beckman); in Norway, 1530 (Beck-

Fig. 16.—Shingle Butter

This home-made machine used to trim off or bevel (supposedly for looks' sake) the often uneven lower ends of riven shingles, was used in Bucks Co., Pa., until about 1890. By pressing the lever, the knife slides down upon the shingle thrust on its side, and at an angle, under it. No. 2091 was recently inherited by James Clark, of Ivyland, Bucks Co., Pa. Its probable date is about 1850.

man); and in New England, *c.* 1634. (*Encyclopaedia Britannica.*)

By the seventeenth century, the evidence further shows that this great board-making tool had two forms, the older of which,

THE FRAMED PIT SAW (Fig. 21),

is here illustrated. Saw mills and saw factories, old and new, big and little, fade into the twilight of centuries, as we look at this thin, narrow, flexible blade, stretched in a rectangular frame, —this ancestor of all carpenter work,— this most interesting of all saws. Here it is represented by a rare specimen in the Essex Institute, at Salem, Mass., which unfortunately lacks its original wide-toothed blade; and it is again illustrated by Figs. 22 and 23, from French engravings, appended to the article "Menusier," in Diderot's *Encyclopaedia*, of 1768. It was held vertically by two men, one the "top man," standing on the log, laid horizontally on moveable cross pieces ("transoms")

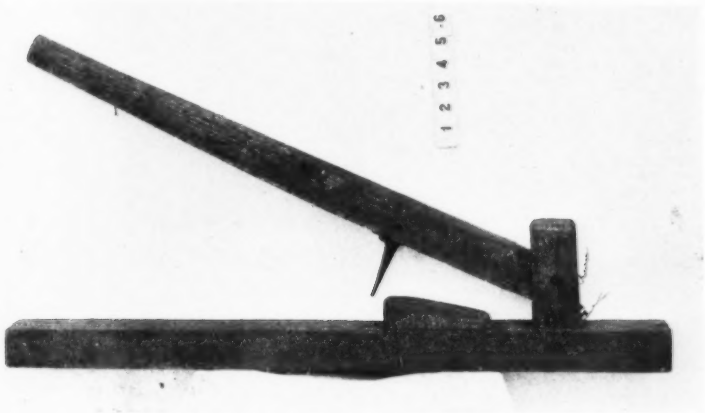


Fig. 17.—The Shingle Punch

When that part of the riven shingle intended to be exposed to the weather on the roof is inserted into the guide, a down-push of the lever forces the chisel-shaped iron punch (always set across the grain) through the shingle at the lower corner where the needed corner nail, freshly driven into red oak, might split the wood. Otherwise a gimlet was used. Riven shingles were set in Pennsylvania, to overlap, not only at the top, but at the sides; hence these nails, to prevent upcurling at the exposed corners. Shingles were made of easily split red oak, hence the punch, not necessary with later imported cypress shingles. The punch or gimlet was probably not used in New England, with pine. Joseph N. Gross used this instrument near New Galena, Bucks Co., Pa., about 1880, as seen by his son, Henry Gross, of Doylestown, the writer's informant.

over a pit, or on a frame, and the other, the "pitman," who stood in the pit, or below the log, to cut full-length, 16-foot boards, from the log. Another picture,

THE ANCIENT ITALIAN PIT SAW
(Fig. 24),

taken from a fresco of about 1350, at the Campo Santo, in Pisa, illustrates it in operation on a balk, set, not horizontally as described, but Chinese fashion, at an angle, and with the teeth of its blade raked all one way (described later) so as to cut only downward. The

KOREAN PIT SAW (Fig. 25)
and
THE CHINESE PIT SAW (Fig. 26)

show superior forms of the same instrument, for the same purpose.

How old in type are these latter tools? How long have they made boards, in Roman style, for these long-secluded nations who still use them? They are more efficient than our ancestral saws because their blades are adjustable sidewise, and if not so well balanced as the saw shown in Fig. 21, they are open sided; that is, framed like the buck saw (described later), so as to present less impediment to the log.

Besides the Pisan fresco, numerous old prints, wall paintings from Herculaneum, carved gems, etc., further recall the use by the Romans and in modern Europe of this ancient, framed, two-man, board-making instrument.

Why should Cescinsky assert (*English Furniture of 17th and 18th Cen-*

Fig. 18.—The Maul or Beetle and Wedges

This heavy, home-made, iron-ringed "maul,"—a hickory block with a handle,—was bought Sept. 28, 1924, from John Wildonger of Plumstead Township, two miles north of Point Pleasant, Bucks Co., Pa. He had made and was still using it for splitting logs and excavated stumps for fire wood. The iron "maul rings" (called "beetle rings" in the *Essex Co. (Mass.) Probate Records*, 1635–1681), made by the blacksmith at Point Pleasant, were kept from coming off by the spreading (under repeated blows) of the wooden face, and also by pegging the face, to swell it around and outside the rings. When the face wore down to the rings, reringing or a new "maul" was necessary.

The rail splitter, who was ordered not to strike the iron wedge with an iron axe for fear of spreading the malleable wedge top, could work with two iron wedges (sometimes only with one), supplemented with a makeshift, axe cut, larger, wooden wedge, still called in Bucks Co., Pa., the "glut" (*cf.* quotation *New English Dictionary*, 1790) here shown at the left, and used to release its iron fellows (right) by widening the split.

These ancient tools were used by the pioneers to split logs for "puncheons" and house timbers; for rails and posts; for the "post and rail" entrances to walled or hedged fields; for the rails for the varied styles of

Fig. 19.—The "Worm" Fence

At an enormous expenditure of trees, this wood-wasting fence was very widely used for field enclosure, throughout the Middle and Western States, in the 19th century and until about 1870, but rapidly fell out of use after the introduction of wire fences about 1885. Survivals continued until 1900, and very rarely in northern Bucks County, until the present time, 1925. No posts were necessary, except at the entrances, where two posts, often with double rows of holes, and four or five loose bars, namely rails with axe-sharpened ends, were employed. From six to ten, usually wedge-split rails, but sometimes poles, were laid zigzag under crossed poles set up at each angle of intersection, with a single rail, called a "rider" on top. The lower rail, at every corner, rested on stones to prevent rotting. In the rebuilt or repaired specimen here shown, now (1924), standing on the north branch of the Neshaminy Creek, west of the Turnpike Bridge, about a mile north of Fountainville, Bucks Co., Pa., the first fork, not in its original condition, has been clumsily over-loaded with "riders." This ingenious device which, except at the barred field entrances mentioned, dispensed with holes hewn in the wood or dug in the ground and needed no nails or wythe fastenings, probably originated in Scandinavia or Middle Europe. But the writer has failed to fix the date of its American introduction. A specimen was seen by Heinrich Partsch standing about 1897 at Bockstein, three miles west of Gastein, in the Austrian Tyrol. Information of H. P. to the writer, August 6, 1922.

turies, pp. 95 and 358, 1911 ed.) that the pit saw was not used in England until *c.* 1690 and that in England boards were hewn, not sawn, before that time, when the *New English Dictionary* shows (*cf.* sawyer) that the pit saw was in use in England in 1350–1415–1465–1497–1616 and 1640; and Moxon (*Mechanick Exercises*) describes and rudely illustrates it as a carpenter's

wood-mounted stone fences—for the "Swede fence," the "post and rail" fence (very common after 1803); and above all, until 1880, to make rails for the "worm fence" used widely in the Middle States until the introduction of wire about 1890 (*cf.* Fig. 19). According to Beckman's unrivalled treatise on the *History of Inventions*, the maul and wedges were used in the Middle Ages instead of the pit saw, to split logs into sections, afterward hewn with the adze or broad axe into boards, rafters or planks. (*See also* Cescinsky, *English Furniture of the Seventeenth and Eighteenth Centuries.*)

Fig. 20—Holzaxt or Split Axe

When all the woodman's wedges are fast in the log, his maul has become useless, and he cuts open the split, not with a felling axe, for fear of dulling its keen edge on underlying stones, but with this extra heavy, dull-edged, wedge-axe, perforated with an eye and mounted on a straight handle. Because, when thus used as a substitute for the maul, he dare not drive the iron wedges with it, for fear of spreading their malleable tops, he protects the latter, as here shown, with ferruled plugs of wood, socketed in their tops. The holzaxt is a rare tool which the writer, after years of search, has thus far failed to find anywhere in the United States except among the Pennsylvania Germans; or to trace to Europe. The specimen shown at the left (now in the Museum of the "Bucks County Historical Society") was owned and used by John Deisher, of Kutztown, Pa., from 1852 to 1885, and was bought from his grandson, Horace Deisher, of Kutztown, who used it until the present year (1925). The middle wedge, also in use, was obtained from Mr. F. Reimert of Kutztown, and belonged before 1904, to Samuel Smith of "Yammerthal," near Kutztown. The axe, No. 7124, is an old Bucks County farm relic, bought in 1897.

and joiner's tool in 1677? The *Essex County (Mass.) Court Records* also prove that the Anglo-American pioneer brought it to Massachusetts before 1681.

The next illustration shows the other form of the great board-making tool, namely

THE OPEN PIT SAW (Fig. 27).

Here we see a thick, long, taper-bladed, two-man instrument, without a frame, with an upper handle, called the "tiller," and a lower adjustable handle, called the "box," surviving, (*a*) at J. S. Beacham's shipyard in Baltimore, in 1916; (*b*) still made by Disston, for export to Russia, in 1915, and (*c*), recently (about 1915) used at Snow's shipyard, Rockland, Me., for sawing ship's knuckles, and odd curved timbers that the power saws could not manage.

When and where this unframed variety of the ancient board saw first appeared; who, by calling it "whip saw," first confused it with other saws, so-named, the writer has failed to learn. Dictionaries and books of reference break down one after another on this interesting subject. With one exception, the classic and later European pictures, thus far found by the writer, illustrate the framed saw and do not show the open pit saw. Moxon, in 1678, does not mention it. Neither does Diderot in 1768. Nevertheless, a rare

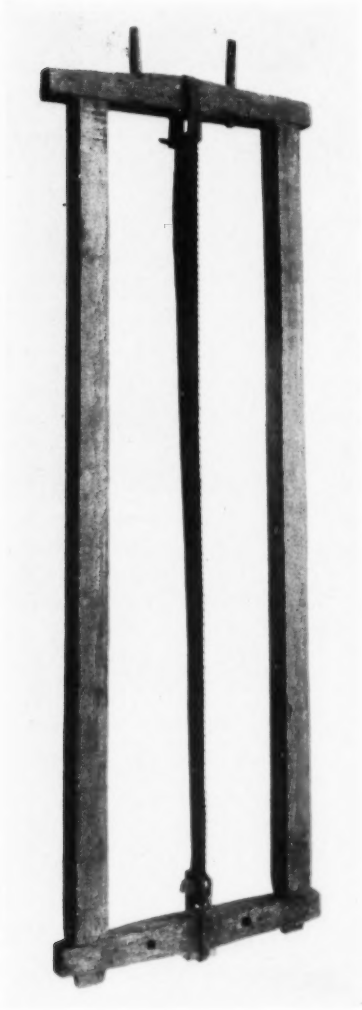


Fig. 21.—Framed Pit Saw

Photographed by kind permission of the Essex Institute, Salem, Mass., Museum No. 101,451. This rare and very interesting instrument, four feet eleven inches long, showing a thin saw blade strained upon a rectangular oblong frame, is of the type universally used for sawing logs longitudinally into boards, before the 18th century and surviving into the 19th century, after the introduction of the open pit saw (Fig. 27). The pegs for the top handle extension, and the peg holes for the bottom handle projecting at right angles, as illustrated by Diderot (Fig. 22) here show clearly. The large-toothed, adjustable blade, proper for board sawing, has here unfortunately been replaced by a smaller-toothed blade, for finer shipyard or joiner's work.

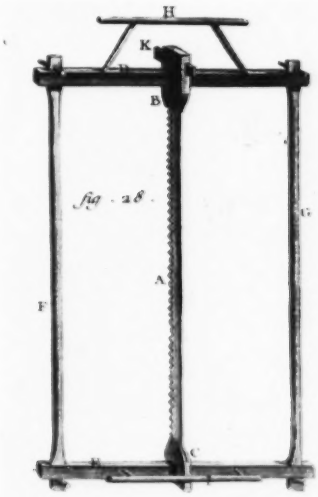


Fig. 22.—French Pit Saw of 1768

From Diderot's *Encyclopaedia*, article "Menuserie." The top and bottom handles, lacking in the joiner's frame saws (shown later) but appearing here and on Fig. 23 and betokened by pegs and peg holes in the unique Essex Institute specimen (Fig. 21), identify the latter, though lacking its original blade, as a true pit saw.

Charles Holtzapffel in his *Turning and Mechanical Manipulation*, London, 1846, Vol. 2, p. 703, while describing the English saw pits of the early 19th century, says that they were from 20 to 50 feet long, 4 to 6 feet wide, and 5 to 6 feet deep and were equipped with two stout timbers running their whole length, called "side strakes," with transverse pieces, called "head sills," at either end; and with one or more intermediate, loose, cross-pieces, shifted under the log or balk while sawing, called "transoms." He also describes the chalk marking, for the saw, of timbers which must be stapled fast upon the head sill with "dogs" (described later), with one end on the head sill and the other on a "transom." If crooked, the

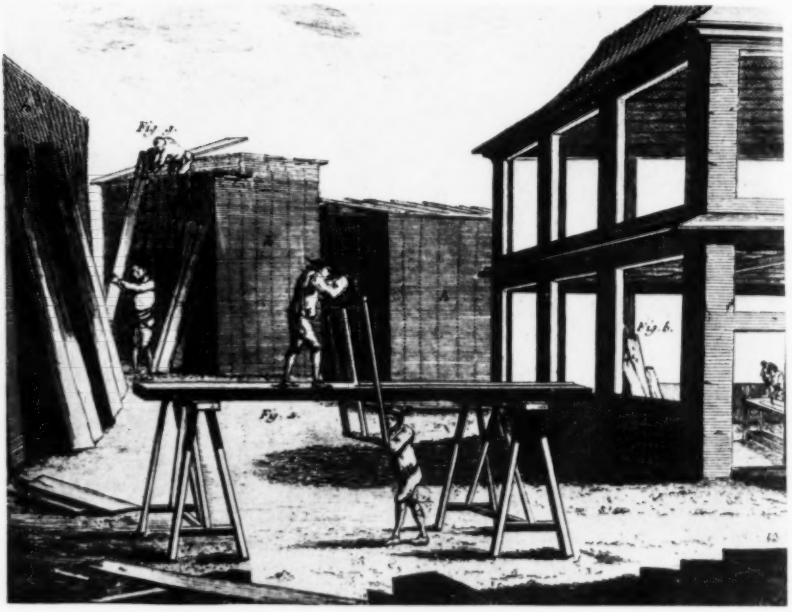


Fig. 23.—Framed Pit Saw at Work in 1768

This illustration from Diderot's *Encyclopaedia* (1768), article "Menuserie," shows two French carpenters ripping a heavy plank, laid horizontally on trestles, with the framed pit saw. This instrument, equipped with an upper handle, resembles that shown in Fig. 21. While serving as an American soldier in France (1918–1919), William Labs saw, in a forest about four miles southeast of Montmorillon, Department of Vienne, peasants, sawing rough boards, by eye,—unmarked by chalk lines,—with a framed pit saw very generally resembling this (handles not noticed), about five feet long and four feet wide, thonged together at the corners and enlargeable by wedges to tighten the blade. The latter was wide and its teeth raked both ways. The log was sawed, not on trestles, as here shown, but chained longways upon, so as to protrude half its length beyond, the flat-hewn top of a single, long, under log, propped, head high, upon two X-shaped props, and with its bent-down, rear end, anchored in the ground. The top log was released, turned, rechained, and sawed end about, when the sawyers reached the under log.

engraving by Antonio Tempesta, 1555–1630 (Fig. 28) proves its existence in Italy in the sixteenth century, and such items, in the *Essex County* (*Mass.*) *Probate Records*, as "1 Whip Saw and 1 Cross Cut Saw" (1647); "1 Whip Saw, 5 shillings, and 1 Cross Cut Saw, 3 shillings" (1654); "3 Saws of which 2 Whip Saws and 1 Cross Cut, 1 pound 4 shillings" (1655); and above all, "3 Whip Saws and Tillers, 16 shillings, 6 d." (1677), must refer to it.

By 1750 to 1760, the invention of rolled steel, replacing hammered steel, in the then water-run iron works (rolling mills), would have greatly facilitated its manufacture. As if oblivious to the lack of historical evidence on the

logs were laid with bend upwards. He speaks of sawing native English trees in log form, but says that for convenience of ship stowage, foreign timbers came to England already squared into balks, with axe or adze.

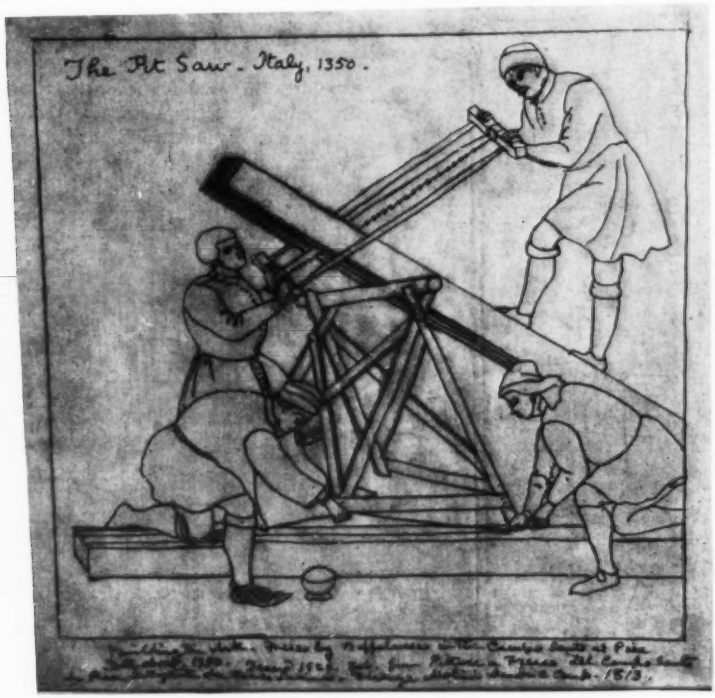


Fig. 24.—Pit Saw of the Middle Ages

The picture represents Noah building the Ark and is from a fresco by Christofano Buffalmacco, in the Campo Santo at Pisa, painted about 1350. The tracing is from an engraving published in *Pitturi del Campo Santo di Pisa*, by C. Lasinio, Firenze, 1813.

The squared log, on which the "topman" stands, is shown as set, not horizontally over a pit or on a scaffold, as in the American shipyards of the 19th century, but, Chinese-fashion, on a trestle, with one end on the ground. (See Fig. 26.) The saw teeth are raked to cut downward and the "pitman," on the ground, does all the cutting. The other two men in the picture are chalk-lining the next balk.

subject, Charles Holtzapffel in 1846, in his *Turning and Mechanical Manipulations*, calls it the "long pit saw" or "whip saw," and illustrates and describes it, with its book-ignored, handle-names, "tiller" and "box." At that late day it was in use as a shipwright's rather than a lumberman's tool, and in England and America (though probably not in Continental Europe), it had taken the place of the old framed tool.

Before considering further the work of board making, we should pause here to clearly realize that throughout the Colonial period, the man-saws above described, whether framed or open, were by no means universal tools, but rather superannuated survivals, used for odd work, such as making special

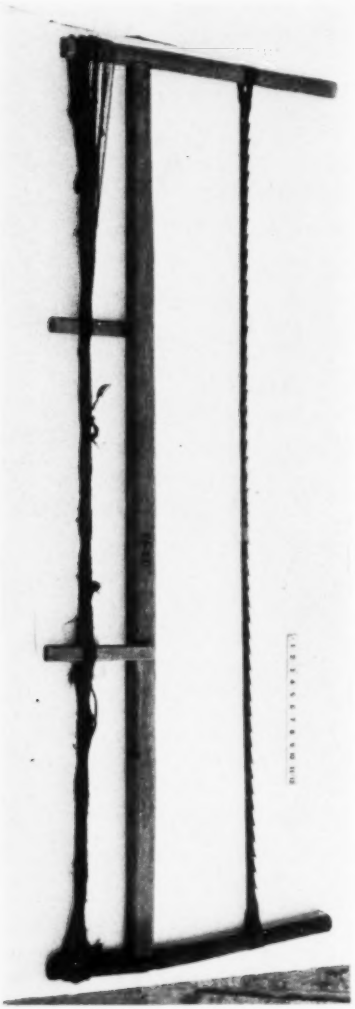


Fig. 23.—Korean Pit or Board Saw

The thin, adjustable blade, set at right angles to the frame, with its large, acute-angled teeth very greatly raked both ways from the middle, is not, like the saw blades here shown, attached to the arms but simply strained tight upon them, by a rope (several strands of hemp cord) toggled against the centre brace,—as in the American buck-saw and Continental hand-saws shown later. Here, two toggle-pegs are used and the central brace, notched at either end against the arms, is also loose. This very clever, light instrument, if not so well balanced as the old American framed pit saw, lacks the outer frame obstruction, and by its adjustable blade and brace, better meets the varying thickness of logs. It is worked, not up and down, but nearly horizontally, on logs set at an angle, as in the Pisan fresco (Fig. 24); hence each sawyer cuts on the pull. It was bought by the Rev. Clarence Hoffman, from the Young Sil Academy, at Kang Kei, Korea, in the summer of 1923.

ship or bridge timbers or furniture boards, and at odd occasions or places, by slave labor, or where water power failed; and that ever since the first settlement of the American colonies, the grand demand for boards, planks, rafters, etc., was supplied by another apparatus which had been doing the same work in Europe before the discovery of America, namely

THE SAW MILL (Figs. 29 and 30)

in which a frame saw, with one or more blades, was worked vertically up and down by a crank revolving on the end of the horizontal axle of a water wheel.

Old pictures, imperfect descriptions, obscure hints in old books, and the writer's personal observations, show a considerable difference in the style and manipulation of this ancient apparatus namely, in its old log carriage, whether moving on rollers, impelled by cog-wheels (as described with the illustrations) or on greased channels, or by windlass ropes or suspended weights; and we find further that owing to variations in the force and volume of water, and in order to get the required velocity, the waterwheels ("overshot," "undershot," "tubwheel," "flutter-wheel," "turbine," etc.) varied in size, construction and name; and in the gear, direct or indirect, of the axled crank above mentioned. But the principle of construction of the machine,

Fig. 26.—Pit Sawing in China

From a photograph taken in April, 1922, by Mr. R. P. Hommel, at Cha Tsuen Chekiang, China. The sawyers are working (like the Italians in Fig. 20) on an oblique, propped log. Their open-sided saw, with a loose adjustable blade and loose central prop, resembles the Korean saw (Fig. 25). Its teeth are also set to work both ways so that each man does half the work.

whether working in Europe in the Middle Ages, or in the American forests in the seventeenth, eighteenth and nineteenth centuries, was always the same. It is not necessary to confuse the mind by examining the modern log carriages or power applications of recent circular or band-saw mills, where the gearing has changed and where the log is often clamped or dogged so as to overhang the side of the carriage; or to climb down into damp, ruinous cellars and wonder at rotting waterwheels; or to lose ourselves in the picturesque maze of ancient wooden machinery which often confuses this masterful device with flour mills. The important point always is, that until the early nineteenth century, a framed pit saw was moved, as here shown, not by men but by water, and that the moving carriage took the place of the long strips ("side strakes") and cross-pieces ("head sills" and "transoms," etc.) laid over the hand sawyer's pit; and that the log moved against the saw and not the saw against the log.

Beckman, in his delightful *History of Inventions*, follows the history of this immensely important, labor-saving apparatus, far back into the Middle Ages, in Central and Southern Europe and Scandinavia. Half a dozen highly interesting pictures, showing it mounted with more than one blade (*i. e.*, as "gang saws") appear in the *Theatrum Machinarum Novum*, by George Andreas Bockler, Cologne, 1662; and although we gather from Charles Holtzapffel (*Turning and Mechanical Man-*

Fig. 27.—Open Pit Saw

This factory-made, two-man saw was used for the special sawing of ship timbers, knuckles, etc., at shipyards in the Eastern United States until about 1900. The large teeth of the wide, tapering blade are all raked downward. The upper handle, called the "tiller," is fast; the lower, called the "box," is slid, loose, over the blade's end, so that on its removal the blade can be pulled out of the kerf. In Maine shipyards, as observed in 1920, the log or balk was set horizontally not over a pit, but on a scaffold built against the side of a bank, and after being chalk-lined, was sawed longitudinally by the "top man," standing on the log, who lifted but did not cut, and the "pit man," standing under the log, who cut on the down-pull.

The writer's brother, in February, 1921, near Mandeville, Jamaica, observed negroes sawing boards, with one of these saws, from a log about sixteen feet long, adze-faced on top and bottom, and placed on a trestle, constructed as follows:

Five feet from the ground, a cross-piece was laid on the top forks of two four-inch, propped posts, from which two parallel poles, about fourteen feet long, extending to the ground, formed an inclined plane, up which the log was rolled, wedged to its face level, and staked, at its intersection with the poles, to prevent down-sliding. The log seen was marked to cut eleven boards and two slabs. It was slightly lifted and the poles shuffled, when, in sawing, the saw had to clear the poles.

The old Italian engraving (Fig. 28), by Antonio Tempesta (1555–1630), proves that this instrument existed in Italy in the 16th century, but it seems probable that it was not so widely used, as the framed pit saw (Fig. 21), until rolling mills (about 1760–1780), facilitated the making of its requisite smooth, broad steel plates.

No. 5686, bought from J. S. Beacham, Baltimore, Md., July, 1916, was then, though rarely, used in his shipyard. No. 8338 was bought March, 1918, for $5, from Henry Disston and Son, of Philadelphia, who had recently revived the manufacture of these pit saws for their Russian trade. No. 12884 was bought in 1918, from Martin Scanlan, of Thomaston, Me., an employee at Snow's Shipyard, Rockland, Me. Scanlan, who sold it with No. 12890 (not shown) and two other similar saws, and kept two for shipyard use, had used it in Snow's yard, a short time before.

ipulations, vol. 2, p. 703) and elsewhere, that it was kept out of England or was little used there until *c.* 1820, and boards were generally sawed from imported trunks already squared up into balks; yet Bishop (*History of American Manufactures*), proves that it appeared at the Newichewannock Falls, on the Piscataqua River, above Portsmouth, N. H., before 1635; at Scituate, Mass., in 1656; at Plymouth, Mass., in 1654;

Fig. 28.—The Open Pit Saw of the 16th Century

This illustration reproduces a copper engraving by Antonio Tempesta, born at Florence, 1555, and died there 1630, satirizing (as explained by the Latin legend and a crowing cock) the house builders of the "Age of Brass." It shows at the left, two sawyers, one of whom is seated on the ground, sawing longitudinally a log, with an open, unframed pit saw. The log is lifted at one end on a cross-piece laid upon two forked posts; and the handles (tillers) of the saw are both fixed. The saw teeth are raked to cut only downward.

in Connecticut in 1661 and soon after in Maine; in Pennsylvania in 1662 (built by the Swedes); and frequently after 1675; in New York by the Dutch, with wind-power, about the same time; and on the Chamblee River, near Montreal, Canada, in 1706. It was in frequent use in New England and the Middle States throughout the seventeenth century, and in 1790, a hundred to two hundred and fifty mill-saw blades were manufactured per year at Canton, Mass., for this apparatus, by which, according to Douglass (*British Settlements in North America*, vol. 2, p. 54, quoted by Bishop), a man and a boy in New England, in 1750, could saw in ten hours, four thousand feet of white pine boards, fifteen to twenty feet long, and one inch thick.

But its day is gone. Because cheaply built and cheaply run (by water) in this, its ancient form, it held its own on American farms, and in the backwoods, long after the introduction of steam in the early nineteenth century. Yet, for the vast general board supply, it failed. The circular saw (1825 to 1840) followed by the band saw, more quickly exhausted the forests and gradually supplanted it, until by the twentieth century, the lumberman forgot it, and like the one here shown it had become a curiosity.

We will conclude the subject of raw-material sawing by illustrating the

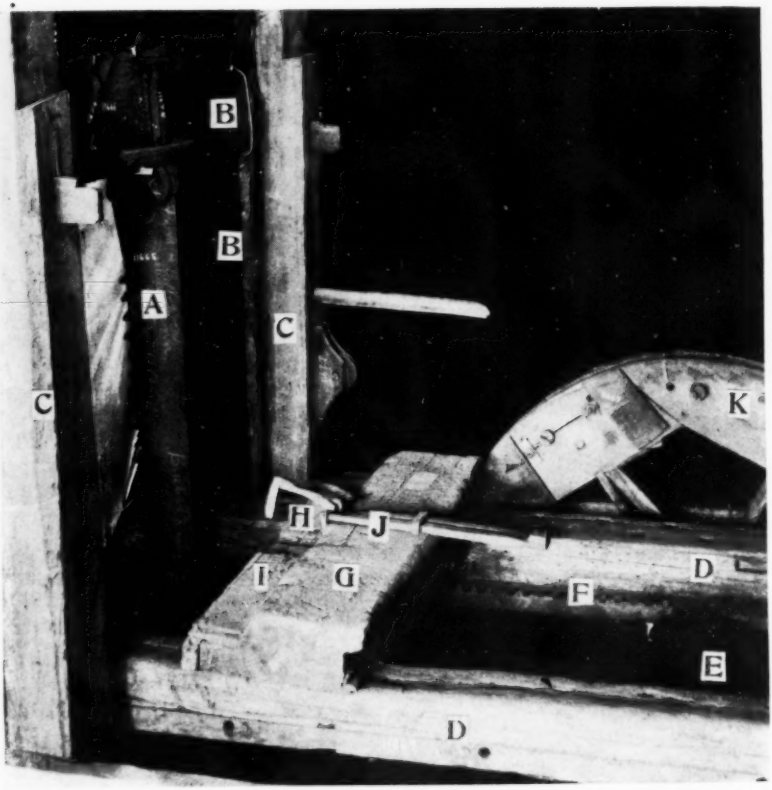


Fig. 29.—The Saw Mill

This illustration shows a part of a typical 18th century water-run saw mill, found and bought by W. H. Labs, near Saltillo, Huntington Co., Pa., and now in the Museum of the "Bucks County Historical Society." It was made about 1800, bought in 1864 from Henry Hudson, by the Weaver family, and worked by H. T. Weaver, until 1902, on the main branch of "Roaring Run," a stream rising on Jack's Mountain.

The saw mill appears here in its simplest form. A single saw blade (A), strained in a frame (BB), works vertically in an upright channel (CC), by means (not shown) of a staff (the pitman) operated by a crank, revolving directly on the end of the horizontal shaft of a water wheel. The saw blade (A) works inside the log carriage (DD), while the saw frame (BB) encloses the latter, which, as here shown, is a long, heavy, narrow, horizontal frame, cross-mortised at either end and moving backward and forward by impulse of a cogged axle (E) engaging cogs (F) under it.

At either extreme end of the carriage, a heavy cross-piece, the tail block (Fig. 30), (fixed) and the head-block (G) (adjustable), rest upon its frame, and before the freshly-felled log, cross-sawed at both ends and notched underneath to lie flat, is set before the saw; the carriage is pushed toward the back of the latter until the saw blade enters a deep slot (H) in the head-block. The log is then rolled with cant hooks and pried with crowbars upon the carriage, so that its lower end rests on the inner rim of the tail-block (Fig. 30) and its upper end, now clear of the saw, on the inner rim (I) of the head-block. The felled tree is then spiked fast, with two dogs on the tail block, and with one dog on the head block. To further stiffen the log, the long, iron,

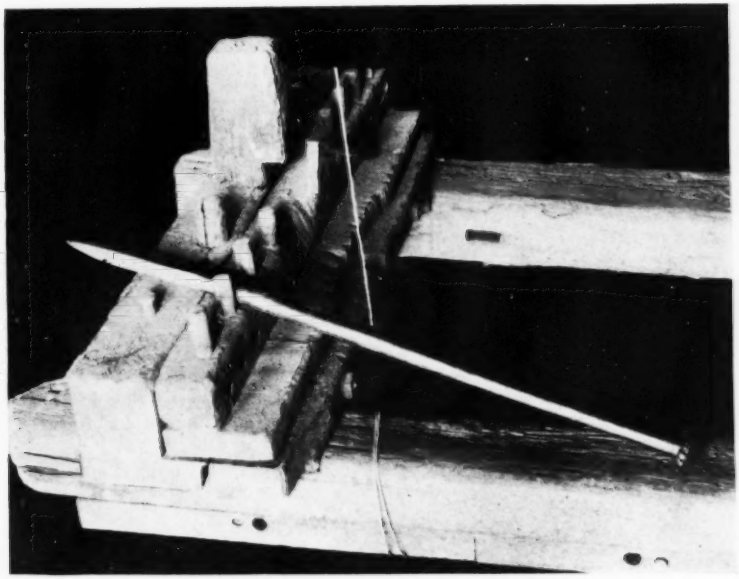


Fig. 30.—Tail Block of the Log Carriage

Upon the mid, inner ledge of the tail block, here shown (the heavy crosspiece, with upward projecting pins, fixed upon the end of the log carriage), the smooth-sawed end of the log is pushed into position by means of the pointed crowbar (shown), when the latter, spiked into the log end, is pried sideways against the pegs. The much battered upper end of the crowbar has been used to pound down the log dogs, one of which is here seen attached to the block.

---

slotted strip (J) stapled down to straddle the wooden slot, is next driven forward so that its two gouge-shaped, reversed prongs spike into and hold fast the log end, on either side of the proposed kerf. The saw then starts, while the action of the carriage pushing the log against the saw begins by the forward movement of the carriage. This is caused by four elbowed sticks not here seen, harnessed to the saw frame, the first of which, attached to its top, rises with every up-stroke of the saw, while the last, thrust downward thereby, upon the toothed circumference of a large, peg-handled rachet wheel (K), here seen, causes the latter to revolve with intermittent stops when the saw goes down.

As the cogged axle (E) of this wheel engages the under cogs (F) of one side of the carriage, the carriage otherwise resting on a greased roller track, then moves forward until the log is bisected longitudinally as far as the tail block, at which the saw stops and the carriage, by backward, man-turning of the handle pins (not seen) projecting from the rachet wheel above mentioned, backs to its position at the start. When the saw is thus again out of the way, in the head-block slot, the log is undogged, pried sideways with crowbars (Fig. 30) at either end, to the desired width for the next curf; whereupon the carriage push and saw cut are repeated. (Information of William Young, mill sawyer of raft logs at Point Pleasant, on the Delaware River, *c.* 1870 to 1890, to the writer, February 22, 1925.)

Until replaced in 1882 by a so-called "rosewheel" of cast iron, the water wheel, called a "flutterwheel," belonging to this saw, was about three feet in diameter and five feet long and consisted of a series of about eight open, flat paddles in no way angled or hollowed which were bolted on wooden arms running through the shaft. The water, conducted upon the wheel, through a chute, overshot its paddles. Old flutterwheels, seen by the owner of this one, varied in length from four to eight feet, with a diameter of from two and a half to never more than five feet. In some of them (undershot), the water passed under the paddles.

In man-pushing back the log carriage as above mentioned, the rachet wheel was reversed, not by hand,

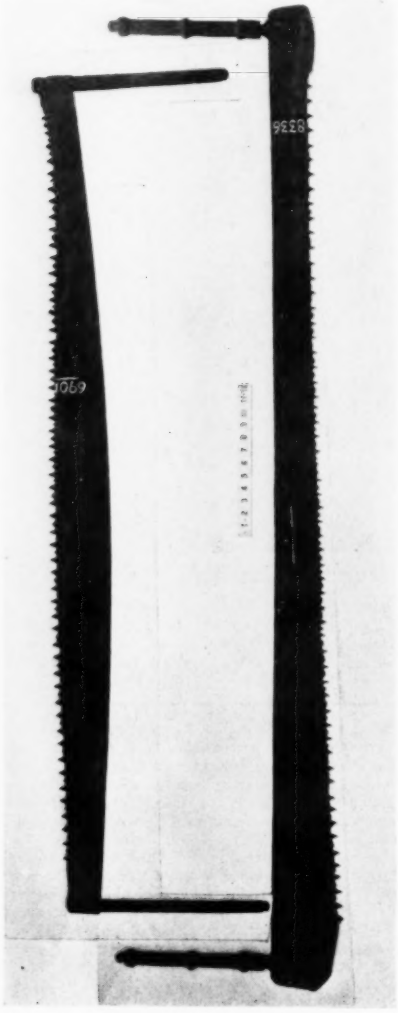


Fig. 31.—The "Cross Cut" or Thwart Saw

From the earliest period of the American settlements, this saw was used, as now, by two men, each holding one of the vertical handles, to cross-cut logs and sometimes to saw down trees (*cf.* numerous mention of the name in the *Essex Co.* (*Mass.*) *Probate Records*, 1635–1681). The very characteristic, wide-set teeth, showing stubbed-intervals, are not raked, so that the instrument cuts both ways. Long before rolling mills facilitated its manufacture, by rolling iron or steel into sheets, this wide, open, saw-blade, forged by blacksmiths or trip-hammered by water-power, was used in Europe, as shown in the old German engraving (Fig. 32) of date about 1500, where the Emperor Maximilian is seen holding one under his arm; or, in another print of the 15th century, shown later, where the end of another appears with modern double-teeth, interspaced with the usual very characteristic blunt intervals. The specimens here shown, are 19th century relics of Bucks Co., Pa., with probably home-made blades.

About 1880, Pennsylvania lumbermen began felling hemlock trees with the cross-cut saw, before which time all trees had been axe-felled, though cross-cut into lengths and butted (*i. e.*, axe-cut butts sawed off) with this factory-made saw (*inf.* John C. French, of Roulette, Potter Co., Pa., to the writer, Feb. 24, 1925). Until the end of lumber rafting on the Delaware, *c.* 1890, all raft logs received at the Point Pleasant saw mill, had had their axe-butts sawed off before reaching the mill (*inf.* Wm. Young, of Point Pleasant, to the writer, Feb. 22, 1925).

Colonel Shoemaker of McElhattan, says, "It is true that the chopped butts were always sawed off the logs (by the lumbermen with the cross-cut saw) before the logs were floated or made into rafts. Twenty-five years ago, when I was a boy, the mountain-sides (in Clinton Co., Pa.) were covered with these butts; and although now many of these have rotted or been destroyed in forest fires, there are many still lying about in the old slashings. This was done long after the old saw mills were superseded by more modern ones. But the custom originated, as Mr. Young stated, because the early saw mills could not accept the axe-cut butts" (Letter of Col. Henry W. Shoemaker to the writer, Feb. 26, 1925).

ancient but still familiar, two-man instrument, with rigid vertical handles, broad unframed, flexible, down-curved blade, and very wide-set teeth, known as the

CROSS CUT OR THWART SAW (Fig. 31)

Far less important and fundamental than the pit saw, because it did not make boards; this long, tremulous

but by foot pressure against the wheel pegs, by a man standing to the right of the saw, outside of the carriage, steadied by grasping two pins, one of which, projecting from the saw frame, may be seen in the picture. Information of the former owner, H. T. Weaver, by letter to the writer, March 6 and 13, 1925.

Abb. 27. Zimmerleute bei der Arbeit, im Hintergrund Kaiser Maximilian. Holzschnitt von Hans Schäufflein (?) (ca. 1492—1540) aus dem Weißkunig. Muther S. 124, 27.

Fig. 32.—Cross-Cut Saw of the 16th Century

From a wood-cut, possibly by Hans Schaufflein of Nuremburg, b. 1492, d. 1540. The picture shows a pile of undressed logs; several squared balks; two small hand-saws, with straight handles in the workmen's belts; the broad axe; the mortising axe; the line and reel with ink or chalk pot; and the cross-cut saw, held under the arm of the Emperor Maximilian. *Monographen zur Deutsche Kultur Geschichte*, G. Steinhausen, Leipsig, 1900. Vol. 8, *der Handwerker*, p. 29.

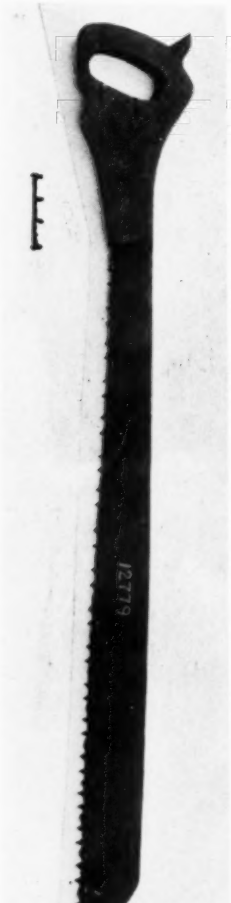


Fig. 33.—One-Man, Cross-Cut Saw

With home-made, hollow-grasp handle and wide-spaced unraked teeth, with rough-rounded intervals, like the two-man instrument, Fig. 31.

tool, was, nevertheless, sometimes used by the carpenter for cross-cutting heavy timber and instead of the axe, by the farmer or lumbermen, for cross-cutting the trunks or butts of axe-felled trees, and gradually, after *c.* 1880, for felling trees.

Besides its general construction, one of its most important and conspicuous characteristics is the shape of its teeth, which, though greatly diversified by recent factory patents, are here shown only in their old inherited European form.

In most saws, the angles of the teeth are never made at right angles, but always at acute angles, and always raked away from the hand, hence cut on the thrust, and not on the pull of the sawyer.

But in this horizontal, two-man saw, where both sawyers should do equal work, the teeth are not raked at all, so that they cut both ways.

We further learn that in order to check the clogging of sawdust in a wide back and forth cut through heavy timber, the teeth of the cross-cut saw are extra wide spaced, and unlike those of any other saw, show jagged or rude shaped intervals between the teeth, as if every other tooth had been broken off or filed down.

In the specimens here shown (Fig. 31), these teeth are single and equi-sided. In others (not shown) the teeth are double, and appear in close set pairs, raked contrariwise, which latter device, though frequently reproduced in modern factory saws, is no modern idea, since it appears in an old German engraving (shown later) by Veit Stoss of the fifteenth century, in the Dresden Print Collection.

The *New English Dictionary* proves that the "thwart saw" was in use in England between 1404 and 1612, and the *Essex County (Mass.) Probate Records* show by numerous entries, that the

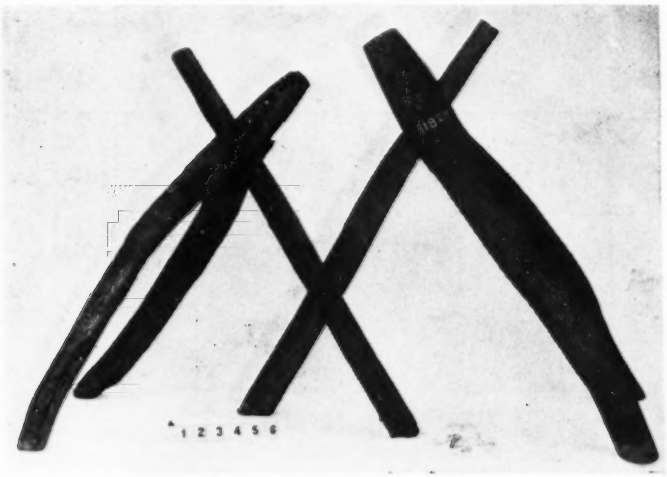


Fig. 34.—Tree Sawyer's Props

A heavy stick, penetrating the top of a downward-forked branch through a hole above the fork, forms a tripod, with an upper fork, upon which branches of felled trees were raised off the ground for convenient sawing with the cross-cut saw. The specimen No. 11827, was used by Enos Lewis of Richlandtown, Bucks Co., Pa., about 1900. It was bought from his widow in 1917.

early New England settlers employed it between 1631 and 1686. Because of its size, it must have been hard to forge and polish; but as blacksmiths had made it since the sixteenth century in Europe, it seems probable, though lacking direct proof, that they made it before the factories made it in America; and if we are right in supposing that the "open pit saw" (Fig. 27) was not extensively made until about 1760, then for centuries this remarkable saw, again shown in Fig. 32, from an old German print of about 1500, with its characteristic widespread teeth at blunt intervals, was the chief open, two-man saw in use.

The next figure shows an old example, with home-made handle, of the comparatively modern and now very common

One Man Cross-Cut Saw (Fig. 33)

and the above illustration pictures two home-made

Saw Props (Fig. 34)

used about 1890 by Pennsylvania woodmen, to hold up, in sawing off, the branches of felled trees.

(*To be continued*)

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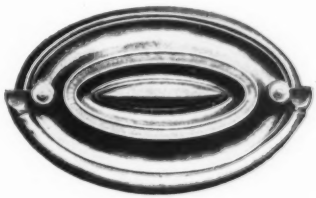

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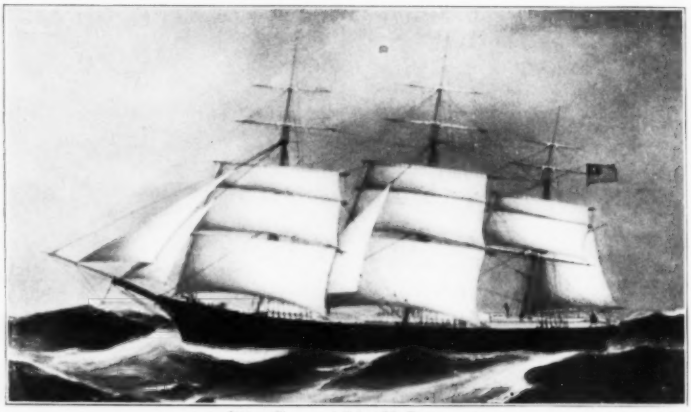

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Queen Anne Cabinets

This pair of Queen Anne cabinets are in their original condition to the smallest detail. They have that rich, mellow color and patina to be found only in the finest Queen Anne walnut furniture. The arch tops and cabriole legs are extremely pretty.

These cabinets would be practical as well as beautiful additions to any Queen Anne room. They measure 18 inches wide, 13½ inches deep, and 51 inches high.

You will find that we have many other pieces of interest to the collector and the person who is filling his house with beautiful things, a piece at a time. All are antiques, authentic and in good condition. They will serve the practical purposes of every-day life, and at the same time add gracious beauty to any home.

You are cordially invited to visit our third floor whenever you will, just as you would another art gallery where the collections are changed from time to time.

Shreve, Crump and Low Company

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147 Tremont Street — Boston, Massachusetts

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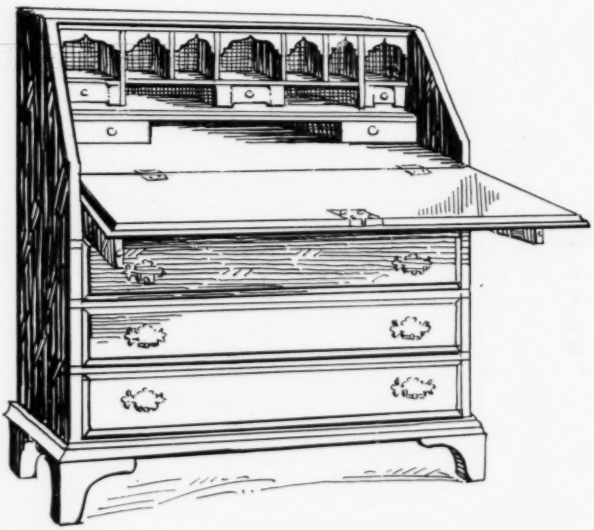
Jordan Marsh Company

Boston

Rare Desks of Distant Days



LIKE the shell of the Chambered Nautilus, this old desk echoes the romance that lived in it awhile and now is lost. In the leisurely days when letters were works of art, written lovingly with a quill in quaint unhurried fashion, desks were consecrated to their honor. Cubby holes, wee compartments just the size of frangipani-scented notes, and concealed drawers were built to guard precious missives.

In our collection are several of the extremely rare walnut desks made by the craftsmen who came to this country from England in 1750. Before they were introduced to the birch, maple and cherry wood used by their brother craftsmen in the new land, they used only walnut, and pieces made by them of this wood are valuable "finds."